



**EZEMVELO
KZN WILDLIFE**
Conservation, Partnerships & Ecotourism



UMLALAZI NATURE RESERVE

Integrated

MANAGEMENT PLAN

2009 - 2013



Umlalazi Nature Reserve

***KwaZulu-Natal
South Africa***

Integrated Management Plan: 2009-2013

*Reviewed and edited by
Ezemvelo KwaZulu-Natal Wildlife Management Planning Unit*

*Based on the Draft Integrated Management Plan (2008 – 2013) by
Brousse-James and Associates*

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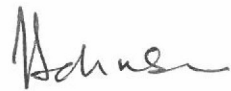
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PREFACE

This Integrated Management Plan for the Umlalazi Nature Reserve is the primary and overarching management document for the Nature Reserve for the period 2008 to 2013. It forms the framework within which the Nature Reserve will be managed and developed towards the achievement of its management objectives, derived in collaboration with the Nature Reserve's stakeholders during the latter part of 2007 and early part of 2008.

The Protected Area Management Planning Process and the resultant planning documents (elaborated on in the next few pages) have been designed to meet the statutory requirements of the National Environmental Management: Protected Areas Act.

The protected area management planning process requires participation from the Nature Reserve's stakeholders, the general public and specialists during the various stages of plan development and implementation. Although the Integrated Management Plan and its sub-components are five-year planning documents, an annual review process will ensure an active adaptive management planning approach.

A long-term business approach has also been introduced that ensures that the Nature Reserve's management objectives are put into action and reflected through a Strategic Management Plan in the Nature Reserve's operational budget over the next five years. A Business Plan will, at the same time, actively pursue additional and improved funding and income towards the achievement of the natural and cultural heritage conservation objectives of the Nature Reserve over the next five years.

Ezemvelo KwaZulu-Natal Wildlife, as the appointed Management Authority for the Umlalazi Nature Reserve, hereby commits itself to the implementation of this plan.

Dr. Bandile Mkhize
Chief Executive Officer

Date:

EXECUTIVE SUMMARY AND PURPOSE OF PLAN

This Integrated Management Plan (IMP) includes the management as well as developmental guidelines for the Umlalazi Nature Reserve (UNR) and is the primary and overarching management document for the UNR for the period 2008 to 2013. The IMP forms the framework within which the reserve will be managed, aligned and developed in an endeavour to achieve the biodiversity conservation, ecotourism and partnership objectives as envisaged and set by the various stakeholders, and refined by the Technical Task Team members during the consultative planning process.

The IMP is based on the Protected Area Reserve Management Planning Process, as required by the National Environmental Management Act (Act No.107 of 1998) and the National Environmental Management: Protected Areas Act (Act No. 57 of 2003), and can only be modified with Ezemvelo KZN Wildlife (EKZNW) approval after consultation with all relevant stakeholders.

The principles underlying the IMP for the UNR are based on general principles guiding the attainment of sustainability – protecting biodiversity; sound resource management; equitable and appropriate community involvement and beneficiation; the creation of viable and sustainable business opportunities; and clear policies, objectives and operational guidelines.

The rationale of an IMP for protected area management is to assist the UNR in ensuring sustainability by protecting the integrity and value of environmental resources, providing measurable benefits to host communities, and enhancing the satisfaction of visitors.

By addressing the needs and expectations of resource managers, communities, and users by defining the processes that contribute to sustainability and monitoring the performance of these processes, EKZNW will ensure that their objectives, as well as those of relevant stakeholders are attained in an acceptable and appropriate manner, consistently.

Related to this is the development the Concept Development Plan which will be developed using the specified zonation process which aims to guide current and future land and activity use in UNR, for the purpose of effecting management and recreation opportunities. The zonation also sets a framework within which conservation programmes for the protected area are implemented.

Through the utilisation of the IMP as guide for the compilation of the Reserve's Strategic Management Plan and Operational Budget, it is envisaged that UNR's management objectives will be operationalised and reviewed annually, providing timeous changes to the five year plan.

As a document to guide the management of the UNR, based on the inputs of all stakeholders, the IMP also serves as the base document for monitoring both performance and compliance regarding the various management objectives of the UNR.

Recognising the important role the UNR plays in local conservation initiatives, EKZNW, as the conservation authority, commits itself to the implementation of this plan.

PROTECTED AREA MANAGEMENT PLANNING PROCESS FRAMEWORK FOR PROTECTED AREAS

The Integrated Management Plan, its components and authorisation

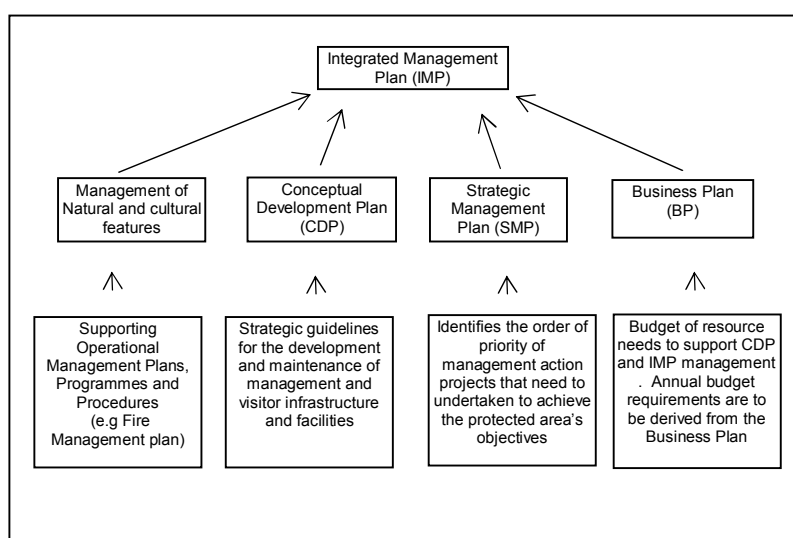
The **Integrated Management Plan (IMP)** is the overarching protected area integrated planning document that describes the administrative and legal framework, contextual background, public participation processes followed, vision / mission statements, management objectives, zonation as well as a management policy framework and guidelines, for a protected area, for a specific 5 year period. The **IMP** forms the framework within which all the other planning components, such as the **Conceptual Development Plan (CDP)**, **Strategic Management Plan (SMP)** and **Business Plan (BP)** are developed. The National Environmental Management: Protected Areas Act 57 of 2003 (NEMPA) considers these plans to be components of the **IMP**.

The **Conceptual Development Plan (CDP)** is an integrated planning document and provides a strategic guideline for the development and maintenance of conservation management infrastructure and visitor facilities / activities within the constraints of the protected area receiving environment. This component will be developed further during the IMP's five-year period. To ensure operational effectiveness, protected areas may require specific Operational plans, programmes and procedures such as Fire management Plans, Wilderness Areas Management Plans, Elephant Management Plans etc, that support the **IMP** and **CDP**. These will be compiled where they do not already exist.

The **Strategic Management Plan (SMP)** is an operational management component that identifies the order of priority of IMP action projects, activities and tasks that need to be undertaken in the achievement of the protected area objectives and attaches key performance areas, responsibilities, timeframes, budgets and resources to each activity. This plan usually takes the form of a Microsoft Access database that 'actions' the Reserve's management objectives and any projects identified by the **IMP**, **CDP** and **Business Plan (BP)**. The **SMP** is a key planning document that also informs the Annual Budgeting Estimates and provides information for Annual Reports.

The **Business Plan (BP)** is primarily aimed at describing the manner in which the **IMP** and **CDP** are to be both financially resourced as well as manpower and capacity needs. It may address issues of operational efficiency and the optimisation of income generated opportunities in order to bridge any possible shortfalls between required operational expenditure and committed provincial government budget allocations. Five year expenditure estimates will inform the development of the **Business Plan (BP)**.

Once the **BP** has been approved, the **SMP** is finalised according to the committed five-year provincial budget allocations for the protected area and other expected financial income.



The process by which the **IMP** plans are developed is in accordance with the requirements of South Africa's environmental legislation, in particular the NEMPA, requiring public consultation and participation, as follows:

- The Protected Area Mission and Objectives contained in the **IMP** are derived in consultation at a Stakeholders' Workshop, the outcomes of which are advertised both regionally and provincially for comment in the next step.
- The **IMP** will be advertised provincially and regionally for public comment before being authorised.
- The **SMP** and **BP** will form the basis for regular progress reporting to the protected area Management Authority and its structures.

The **IMP** and its subsidiary plans are required to be authorised by the Provincial Minister for the Department of Agriculture, Environmental Affairs and Rural Development, in terms of the National Environmental Management: Protected Areas Act 57 of 2003. The IMP and any subsidiary plan is to be forwarded to the MEC on recommendation from the EKZNW Board.

IMP Planning & Review

The IMP requires both annual and five year revision cycles to ensure that the management objectives remain relevant and that management actions are continually improved. The figure below illustrates how the annual and five year planning and review cycles are to be integrated.

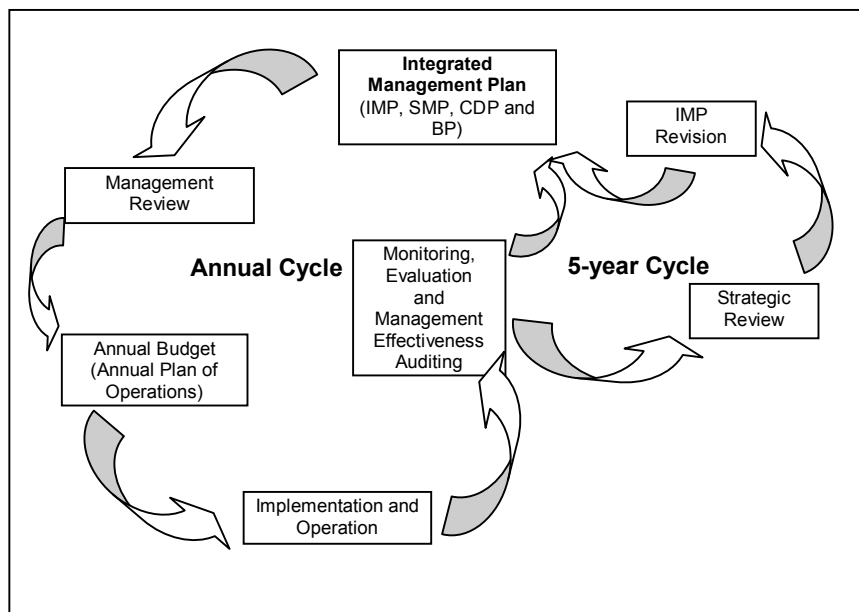


Figure 1: Integrated Management Plans: Aligning Annual and Five year Cycles

DEFINITIONS

Alien Species:

Means species or genotypes, which are not indigenous to Umlalazi and the surrounding area including hybrids and genetically altered organisms.

Amafa

Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)

Biodiversity / Biological Diversity:

Means the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems (as per the National Environmental Management: Biodiversity Act, 2004 [Act No. 10 of 2004]).

Bioprospecting:

In relation to indigenous biological resources, means any research on, or development or application of, indigenous biological resources for commercial or industrial exploitation, and includes –

The systematic search, collection or gathering of such resources or making extractions from such resources for purposes of such research, development or application (as per the National Environmental Management: Biodiversity Act, 2004 [Act No. 10 of 2004]).

Board:

Means the KwaZulu-Natal Nature Conservation Board as defined by the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No.9 of 1997).

Buffer Zone:

Means an area surrounding Umlalazi that has restrictions placed on its use or where collaborative projects and programmes are undertaken to afford additional protection to the Nature Reserve.

Co-management:

The term 'Co-management' will be understood within the context of Section 42 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).

Cultural Heritage:

As defined in Article 1 of the World Heritage Convention (UNESCO) 1972¹, 'cultural heritage' is considered as "monuments, architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of value from the point of view of history, art or science, groups of buildings, groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of significance from the point of view of history, art or science, sites, works of man or the combined works of nature and man, and areas including archaeological sites which are of value from the historical, aesthetic, ethnological or anthropological point of view." For the purpose of this IMP, living heritage features such as mountains, pools, rivers, boulders, etc. as well as palaeontological features are included under this definition.

Eco-cultural Tourism (ecotourism):

Means the travel to natural areas to learn about the way of life and cultural history of people, the natural history of the environment, while taking care not to change the environment and contributing to the economic welfare of the local people (*adapted from a definition of ecotourism by Hecto Ceballos Lascurain*).

Ecological Integrity

Means the sum of the biological, physical and chemical components of an ecosystem and its products, functions and attributes (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Ecosystem:

Means a dynamic complex of animal, plant and micro-organism communities and their non-living environment interacting as a functional unit (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

¹Convention concerning the protection of the World Cultural and Natural Heritage. UNESCO. Adopted by the General Conference at its seventeenth session, Paris, 16 November 1972. Paris, France.

Ecosystem Services:

As defined in Section 1 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) as “environmental goods and services” meaning:

- (a) benefits obtained from ecosystems such as food, fuel and fibre and genetic resources;
- (b) benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification; and
- (c) cultural non-material benefits obtained from ecosystems such as benefits of a spiritual, recreational, aesthetic, inspirational, educational, community and symbolic nature;”

For the purposes of this IMP, sustainable water production is also specifically included under this definition.

Environmental Degradation:

Means the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the loss of species or undesirable reduction of species population numbers from a specific area from an environmental health perspective.

Indigenous Species:

In relation to a specific protected area, means a species that occurs, or has historically occurred, naturally in a free state of nature within that specific protected area, but excludes a species introduced in that protected area as a result of human activity (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Invasive Species:

Means any species whose establishment and spread outside of its natural distribution range –

- a. threaten ecosystems, habitats or other species or have a demonstrable potential to threaten ecosystems, habitats or other species; and
- b. may result in economic and environmental harm or harm to human health.

(as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Joint Management:

Means the agreed co-ordination of management and / or mandated managers on their individual or combined properties in order to achieve common management objectives

Local Community:

Means any community of people living or having rights or interests in a distinct geographical area (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Management:

In relation to a protected area, includes control, protection, conservation, maintenance and rehabilitation of the protected area with due regard to the use and extraction of biological resources, community-based practices and benefit sharing activities in the area in a manner consistent with the Biodiversity Act (as per the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).

Management Authority:

In relation to a protected area, means the organ of state or other institution or person in which the authority to manage the protected area is vested (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Nature Conservation:

Means the conservation of naturally occurring ecological systems, the sustainable utilisation of indigenous plants and animals therein, and the promotion and maintenance of biological diversity (as per the KwaZulu-Natal Nature Conservation Management Act, 1997 [Act No.9 of 1997]).

Nature Reserve

Means Umlalazi Nature Reserve

Neighbouring Community:

Means the communities and people permanently living in the local municipal area / s bordering onto the Nature Reserve.

Natural Heritage:

As defined in Article 2 of the World Heritage Convention (UNESCO) 1972² 'natural heritage' is considered as: "natural features consisting of physical and biological formations or groups of such formations, which are of value from the aesthetic or scientific point of view, geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of value from the point of view of science or conservation, natural sites or precisely delineated natural areas of value from the point of view of science, conservation or natural beauty." For the purposes of this IMP, this would include the required ecological integrity of the protected area for the production of ecosystem services.

Partnership/s:

Means a co-operative and / or collaborative arrangement between the Nature Reserve management / EKZNW and a third party that supports the achievement of the Nature Reserve management objectives.

Protected Area:

- Means any area declared or proclaimed as such in terms of section 3 or listed in the Second Schedule to the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997); or
- Means any of the protected areas referred to in section 9 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).

Stakeholders / Interested Parties³:

These are interested individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public. According to the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), "stakeholder" means a person, an organ of state or a community contemplated in section 82 (1) (a), or an indigenous community contemplated in section 82(1) (b).

Sustainable:

In relation to the use of a biological resource, means the use of such resource in a way and at a rate that would not lead to its long-term decline; would not disrupt the ecological integrity of the ecosystem in which it occurs; and would ensure its continued use to meet the needs and aspirations of present and future generations of people (as per National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

² UNESCO 1972 *Convention concerning the Protection of the World Cultural and Natural Heritage*. Adopted by the General Conference at its seventeenth session, Paris, 16 November 1972. UNESCO, Paris, France

³ Defined in Guideline Document EIA Regulations, National Department of Environmental Affairs and Tourism, April 1998

ABBREVIATIONS

AMP	Protected Area Management Plan
BBBE	Broad Based Black Economic Empowerment
BEEP	Biodiversity Environmental Education Programme
BP	Business Plan (Component of EKZNW protected area management planning process)
BPEO	Best Practicable Environmental Option
CDP	Concept Development Plan (Component of EKZNW protected area management planning process)
DEAT	Department of Environmental Affairs and Tourism
DAE&RD	KwaZulu-Natal Provincial Department of Agriculture, Environmental Affairs and Rural Development
DLA	Department of Land Affairs
DPW	Department of Public Works
DWEA	National Department of Water and Environmental Affairs
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
FPA	Fire Protection Association in terms of the National Veld and Forest Fire Act, 1998 (Act No.101 of 1998)
GIS	Geographical Information Systems
I&AP	Interested and Affected Parties
IDP	Municipal Integrated Development Plan
IEM	Integrated Environmental Management
IMP	Integrated Management Plan
IUCN	International Union for Conservation of Nature <u>or</u> The World Conservation Union (as commonly referenced)
JMC	Joint Management Board/Committee
KPA	Key Performance Area
KZN	KwaZulu-Natal Province of the Republic of South Africa
LDP	Local Development Plan
MCM	National Department of Marine and Coastal Management
MEC	Member of the Executive Council for DAEA&RD, KwaZulu-Natal Provincial Government
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
PAMC	Protected Area Management Committee / Reserve Planning Committee
PPP	Public Private Partnership
ROC	EKZNW Regional Operations Committee
SAHRA	South African Heritage Resources Agency
SCDP	Siyaya Catchment Demonstration Project
SCP	Siyaya Coastal Park
SMP	Strategic Management Plan
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNR	Umlalazi Nature Reserve
WfC	Working for the Coast
WOS	Wilderness Opportunity Spectrum

ABBREVIATIONS USED FOR STATUTES (LEGISLATION)

KZNHRA	KwaZulu Heritage Resources Act (Act No. 10 of 1997)
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
ECA	Environment Conservation Act (Act No. 73 of 1989)
KZNNCMA :	KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)
NEMA	National Environmental Management Act (Act No.107 of 1998)
NEMICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NEMBA:	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMPAA:	National Environmental Management: Protected Areas Act 2003 (Act No. 57 of 2003)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NWA	National Water Act (Act No. 36 of 1998)
PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
PFMA	Public Finance Management Act (Act No. 1 of 1999)
TOPS	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) in relation to Threatened or Protected Species (TOPS Regulations).

1. PURPOSE AND SIGNIFICANCE OF THE UMLALAZI NATURE RESERVE

1.1 Purpose

The purpose of Umlalazi Nature Reserve (UNR) is to:

- Contribute to the achievement of Provincial and National conservation targets through protecting a representative portion of the Southern most portion of the Maputaland Coastal Plain and its associated biodiversity, including the ecological and evolutionary processes that generate and maintain this diversity. The Mlalazi River is known for its mangrove system, and the UNR also conserves swamp forest, salt marsh, sandy beaches which are undeveloped and a prograding beach with associated dune vegetation;
- Conserve and maintain a remnant of the Southern Zululand vegetation;
- Protect endangered, rare and endemic species indigenous to the area;
- Preserve and conserve the ecological and cultural heritage integrity of the area;
- Provide controlled and equitable access for the public to the area and its resources;
- Contribute to local and regional economies through sustaining good quality water production and by providing a public amenity; and
- Provide a destination for eco-cultural tourism in the KwaZulu-Natal Province.

1.2 Significance

The significant values of UNR include:

Ø **Natural and cultural values.** Various UNR natural and cultural heritage features are of regional significance, and incorporate the following:

- UNR has 327 recorded bird species with bird watching being an important activity within the Nature Reserve;
- The outstanding natural beauty and aesthetic value of the area;
- The diverse system of natural wetlands (both fresh and salt water);
- The biological diversity of species and habitats with some presently only being protected within this Nature Reserve; and
- UNR also has an aquatic zone which offers a range of biological diversity as well as a variety of activities to the public based on these natural features and recreation.

Ø **Biodiversity and natural heritage values:**

- Relatively unspoilt coastline, beach and estuaries.
- Pro-grading beach and dune system.
- The Mlalazi Estuary is a good example of a KwaZulu-Natal estuary having flourishing mangrove forest with substantial salt marshes.
- The Umlalazi Estuary ranks 20th amongst the top 50 South African estuaries ranked in terms of conservation importance, where conservation importance that is in terms of size, habitat, zonal type rarity and biodiversity importance scores (Turpie, *et al.*). In terms of botanical importance, it ranks 10th and in terms of importance to fish, it ranks 5th.
- Migration route between Richards Bay Coastal Forests, Amatikulu Nature Reserve and the Ongoye Forest.
- Coastal Wetlands and Climax Coastal Dune Forest.
- Diversity of habitats which includes mangroves, dune vegetation, hygrophilous vegetation (forest and reeds), tidal marsh vegetation and *Acacia* thicket community.
- Source of seeds for colonisation of other damaged areas outside of the Nature Reserve, e.g., where dune mining is taking place.
- Provides habitat for a number of important animal species, including red data fish, reptile and bird species.
- Umlalazi Nature Reserve is particularly well known for the Palmnut vultures, which feed and nest on the *Raphia australis* palms. This is the most southern breeding site in Africa for this species.

Ø Economic significance:

- The Umlalazi estuary provides a number of ecosystem services, including silt trapping, acting as a carbon sink, a nursery for fisheries, processing of sewage and a source of sustainable resources.
- Mangroves in UNR have a number of economic values, i.e., provide a number of ecosystem services, namely:
 - Protection of land from storm erosion.
 - Trapping of sediments.
 - Important nursery for fish and prawns.
 - Some adult fish live and feed in forests at high tide.
 - Ecotourism and educational value.
 - Act as a carbon sink.
 - Act as filter for effluent from fish farms and other agricultural activities.
- The estuary provides a focal point and attraction to tourists utilising the accommodation facilities, restaurants and other tourist facilities within the town of Mtunzini. It has attracted people who wish to live in a relatively unspoilt environment and has resulted in the building of housing developments and the planning of more of these.

Ø Outdoor Recreation and Eco-cultural Tourism.

- UNR provides sustainable outdoor recreation and eco-cultural tourism activities in an area of important natural and aesthetic beauty and thus significantly contributes enhanced tourism opportunities for visitors. Recreation opportunities at Umlalazi Nature Reserve include fishing, boating, walking (hiking), bird watching, mountain biking and canoeing. The beach provides activities such as swimming, surfing, kite boarding, surf fishing, fishing ski, jet ski and ski boat fishing.
- UNR is of critical importance as a natural outdoor coastal recreational amenity for the people of Mtunzini and beyond.

2 ADMINISTRATIVE AND LEGAL FRAMEWORK

2.1 Institutional Arrangements

2.1.1 UNR Management Authority

Ezemvelo KwaZulu-Natal Wildlife is the appointed Management Authority responsible and accountable for the Umlalazi Nature Reserve (UNR). This will be confirmed in terms of Section 38(2) of the National Environment Management: Protected Areas, 2003 [Act No.57 of 2003] (NEMPAA) which requires that the provincial MEC assign the management authority for a Protected Area.

Action Project 2.1.1 (i): Obtain written assignment from the MEC re-appointing EKZNW as the management authority for (UNR) in terms of Section 38(2) of NEMPAA.

As the current Management Authority EKZNW is responsible for reporting on the management of the Nature Reserve to the designated KwaZulu-Natal Provincial Member of the Executive Committee and the Premier thus ensuring co-ordination of those matters that may affect (UNR) through the relevant provincial departments, district and local Municipalities.

2.1.2 Land Claims and Co-management

There are no known land claims against UNR.

2.1.3 Separation of Authority Functions

Other public service providers within UNR include electricity provided by Eskom and telephone lines provided by Telkom.

Action Project 2.1.3 (i): Update and compile a list of all service providers in UNR.

2.2 Legislation Guiding the Administration of the Umlalazi Nature Reserve

It is important to note that Umlalazi Nature Reserve is a protected area in terms of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003 [NEMPAA]). In terms of this Act, any conflicts with other legislation will be dealt with in accordance with Section 7 of NEMPAA. In essence it stipulates that where a provision of NEMPAA specifically concerns the management or development of protected areas, and there is conflict with other national legislation, the relevant section of NEMPAA prevails.

The operational administration and management of the Nature Reserve is subject to the following key statutes – it is acknowledged that this list is not exhaustive. Managers will familiarize themselves with the purpose and contents of these statutes as well as their subsequent amendments and regulations. Many of these statutes can be downloaded from the following SA Government Documents internet website:

<http://www.info.gov.za/view/DynamicAction?pageid=528>.

Not only do these Acts and Ordinances guide the specific decisions and actions, they also provide the framework for monitoring performance and compliance, and provide guidelines regarding contravention, offences and penalties.

Within the South African context, ensuring compliance to relevant legislation is a must. Therefore it is imperative that all actions undertaken by management are compliant with all relevant legislation such as:

Natural and Cultural Heritage / Resource Management and Development:

- AMAFA AkwaZulu – Natali/ Heritage KwaZulu: KwaZulu Heritage Act (Act No. 10 of 1997).
- Animals Protection Act, 1962 (Act No. 71 of 1962).
- Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965).
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).
- Constitution of the Republic of South Africa, 1997 (Act No. 108 of 1997).
- Criminal Procedure Act, 1977 (Act No. 51 of 1977).
- Environment Conservation Act, 1989 (Act No. 73 of 1989).
- Forest Act, 1984 (Act No. 122 of 1984).
- Game Theft Act, 1991 (Act No 105 of 1991).
- KwaZulu Animal Protection Act, 1987 (Act No. 4 of 1987).
- KwaZulu Nature Conservation Act, 1975 (Act No. 8 of 1975).
- KwaZulu Nature Conservation management Act (Act No. 9 of 1997).
- KwaZulu-Natal Heritage Act, 2008 (Act No. 4 of 2008).
- KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997).
- National Environmental Management Act, 1998 (Act No. 107 of 1998).
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).
- National Forests Act, 1998 (Act No. 84 of 1998).
- National Heritage Resources Act, 1999 (Act No. 25 of 1999).
- National Veld and Forest Fire Act, 1998 (Act No.101 of 1998).
- National Water Act, 1998 (Act No. 36 of 1998).
- National Water Amendment Act, 1999 (Act No. 45 of 1999).
- Nature Conservation Ordinance, 1974 (Act No. 15 of 1974).
- Traditional Healers Act (Act No. 10 of 2004).

General Management:

- Broad – Based Black Economic Empowerment Act (Act No. 53 of 2003)
- Development Facilitation Act, 1995 (Act No. 67 of 1995).
- Disaster Management Act, 2002 (Act No. 57 of 2002).
- Fencing Act, 1963 (Act No. 13 of 1963)
- Fire Brigade Services Act, 1987 (Act No. 99 of 1987).
- Firearms Control Act, 2000 (Act No. 60 of 2000)
- Intergovernmental Relations Framework Act, 2005 (Act No.13 of 2005).
- KwaZulu Ingonyama Trust Act (Act No. 3 of 1994)
- KwaZulu-Natal Planning and Development Act, 1998 (Act No. 5 of 1998).
- Local Government: Municipal Structures Act, 1998 (Act No. 117 of 1998).
- Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000).
- Municipal services Act (Act No. 32 of 2000)
- Natal Town Planning Ordinance, 1949 (Act No. 27 of 1949).
- National Building Standards Act, 1977 (Act No. 103 of 1977).
- National Road Traffic Act, 1996 (Act No. 93 of 1996).
- Occupational Health and Safety Act No, 1993 (Act No. 85 of 1993).
- Restitution of Land Rights Act, 1994 (Act No. 22 of 1994).
- State Land Disposal Act, 1961(Act No. 48 of 1961).
- Water Services Act, 1997 (Act No. 108 of 1997).

Financial Management:

- Public Finance Management Act, 1999 (Act No. 1 of 1999).

Human Resource Management.

- Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997).
- Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993).
- Employment Equity Act, 1998 (Act No. 55 of 1998).
- Labour Relations Act, 1995 (Act No. 66 of 1995).
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
- Pension Funds Act, 1956 (Act No. 24 of 1956).
- Skills Development Act, 1998 (Act No. 97 of 1998).
- Skills Development Levies Act, 1999 (Act No. 9 of 1999).
- Unemployment Insurance Act, 2001 (Act No. 63 of 2001).

Nature Reserve/ Game Reserve/ Park Regulations

EKZNW protected area regulations are enforced in accordance with Section 15 of the Nature Conservation Ordinance, 1974 (Act No. 15 of 1974) read together with the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)

2.3 Regional Planning Context and Principles

UNR is a core conservation area forming part of the KZN protected area network. As with all EKZNW protected areas, the intention is to continually improve management effectiveness of UNR in line with the levels adopted for all protected area within the EKZNW protected area network.

In the KwaZulu-Natal Province, the Nature Reserve is situated within the uThungulu District Municipality [DC 28] and the Umlalazi Local Municipality [KZ 284].

Alignment with regional plans will assist in developing an effective buffer zone around UNR. Protected Area Management in collaboration with the designated EKZNW officials will be tasked to make the relevant inputs whenever these municipalities' Integrated Development Plans and Spatial Development Frameworks are reviewed and updated.

Action Project 2.3(i): Management in collaboration with other relevant EKZNW officials will be tasked with active participation in the review processes of the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) in order to ensure an effective buffer zone surrounding UNR through an alignment of appropriate land use adjacent to the Nature Reserve.

Action Project 2.3(ii): Establish and maintain relationship with Umlalazi Municipality to enable effective integration into local planning.

2.4 Proclamation Status of the Umlalazi Nature Reserve

In terms of the national system of classification of protected areas (which follows that of the IUCN), UNR presently comprises national park and equivalent reserve.

Proclamation No. 13 of 1948, Schedule: 'The area previously known as the Umlalazi Crown Lands, in extent 540 acres, a description of the boundaries of which is as follows:

From the point where the prolongation of the north-eastern boundary of lot No. 100, Umlalazi, No. 12848, intersects the high-water mark of the Indian Ocean; thence in a straight line to the most easterly beacon of Lot No. 100, Umlalazi No. 12848, common to it and the Mtunzini Townlands (Diagram S.V. 898/66); thence in a north-easterly direction along the south-eastern boundary of the Mtunzini Townlands (Diagram S.V. 898/66) to the point where the prolongation of that boundary intersects the high-water mark of the right bank of the Mlalazi River; thence along the high-water mark of the right bank of the Mlalazi River and the Mlalazi Lagoon to the point where it intersects the high-water mark of the Indian Ocean; thence along the high-water mark of the Indian Ocean to the point first named.'

Proclamation No. 50 of 1950, Schedule: (a) 'The area previously known as the Umlalazi Crown Lands, in extent 540 acres, a description of the boundaries of which is as follows: From the point where the prolongation of the north-eastern boundary of Lot No. 100, Umlalazi, No. 12848, intersects the high-water mark of the Indian Ocean; thence in a straight line to the most easterly beacon of Lot No. 100, Umlalazi No. 12848, common to it and the Mtunzini Townlands (Diagram S.V. 898/66); thence in a north-easterly direction along the south-eastern boundary of the Mtunzini Townlands (Diagram S.V. 898/66) to the point where the prolongation of that boundary intersects the high-water mark of the right bank of the Mlalazi River; thence along the high-water mark of the right bank of the Mlalazi River and the Mlalazi Lagoon to the point where it intersects the high-water mark of the Indian Ocean; thence along the high-water mark of the Indian Ocean to the point first named. **(b)** The Farm Siyayi, in extent 1700 acres, and represented on Diagram S.G. No. 5707/1949.'

Proclamation No. 183 of 1974, 'Under and by virtue of the powers declare and make known that the water area of the Mlalazi River, Estuary and lagoon between the railway line and the sea as well as the adjoining land between the high and low water marks shall be a nature reserve with effect from date of publication hereof and shall form part of the Umlalazi Nature Reserve as proclaimed under proclamation No. 50 of 1950.'

Proclamation No. 101 of 1977, 'I do hereby proclaim, declare and make known that the properties described as - Lots 141, 142, 146, 148, 149, 150 151 and 152 (each in extent 2023 m²) within the township of Mtunzini, shall be nature reserves with effect from the date of publication hereof and shall form part of the Umlalazi Nature Reserve.'

Proclamation No. 16 of 1986, '...by the inclusion therein of the property described as Sub 11 of Lot 100 Umlalazi No. 12848, situate in the Administrative District of Natal, measuring one two nine comma eight six nine seven (129,8697) hectares.'

EKZNW is in the process of leasing Lot 155 and Lot 156 (within the Nature Reserve) to private land owners, in exchange for land donated to EKZNW in the Midlands. The private land owners have the right to build property on these Lots provided they following specifications set out by EKZNW.

Action Project 2.4 (i): Obtain the services of a land surveyor to register the consolidated UNR with the Surveyor General and seek the proclamation of the area by the MEC.

Action Project 2.4(ii): The UNR Manager needs to be familiar with the leases and ensure that there is compliance with the conditions of the documents

2.5 Local Agreements, Leases, Servitude Arrangements and MoUs

The formal documentation and maintenance of all local agreements, leases, servitude arrangements and MoUs concerning the authorised use of UNR area by beneficiaries other than EKZNW will be undertaken to promote transparency and good governance. All such agreements will be scrutinized by the Manager: EKZNW Legal Services for direction, prior to any appointed EKZNW executive member signing such documents.

Local agreements and servitudes within the Nature Reserve include the following:

- Telkom line (Internet).
- Vunani Aquaculture Sea Water Pipeline (fish farm) and electricity supply line.
- Seacom Line – Internet cable (private).
- Access cards for local residents.
- Dog permits for local residents.
- Umlalazi Ski Boat Club – Boat launch site management on behalf of KZN Wildlife.
- Mtunzini chalets have access across the Siyayi River to the beach. Mondi has access to three points in the southern dunes to fight fires.
- Security.
- Waste disposal.
- Private land owners access.

The UNR Manager will be familiar with the content of such authorised documents and will ensure that there is compliance with the conditions contained therein. Copies of all documentation will also be filed manually and digitally at the UNR management and regional management offices for easy reference. These copies will be updated in accordance with any authorised amendments.

Action Project 2.5 (i): Obtain and review all formal and informal local agreements, leases, servitude arrangements *etc.* pertaining to UNR and document, update, maintain and monitor these appropriately authorised agreements. All informal agreements are to be formalised and submitted for approval by the Executive.

2.5.1 Extending Conservation Land Use Management in Areas Surrounding the UNR Nature Reserve

Opportunities may arise that will enable the establishment of new formal protected areas or other conservation management areas on land bordering or in vicinity of UNR in collaboration and co-operation with the relevant stakeholder and landowners. This is likely to contribute to the EKZNW conservation planning targets through more effective natural and cultural heritage conservation. Indirectly, new tourism opportunities could also develop with the resulting socio-economic benefits.

All EKZNW officials associated with UNR will remain sensitive to these opportunities and ready to engage with the relevant role-players, assisting them with the most appropriate options for establishing conservation areas. This may be in the form of conservancies, private, community or local authority protected areas, contractual protected areas, public open space or even incorporation of land into UNR and in so doing increasing the extent of core protected areas within KZN and increasing protected area representivity. Alignment with the municipal IDPs will also be actively sought to ensure appropriate land use on the borders of UNR.

The most important areas in this regard would be the opportunity to expand UNR by incorporating municipal land into the Nature Reserve and by being given the first option to purchase private land within the Nature Reserve.

Action Project 2.5.1 (i): Annually explore and investigate opportunities to extend conservation land use in and around UNR.

Action Project 2.5.1 (ii): Investigate and ensure that EKZNW has the first right to purchase the private owned land that lies within the UNR.

3 BACKGROUND

3.1 Origin of the Name of the Umlalazi Nature Reserve

The Nature Reserve lies at the confluence of the Mlalazi and Siyayi rivers, the latter running uniquely parallel to the Indian Ocean for about 8 km. It is one of the few places in southern Africa where wildlife can be viewed on forested dunes overlooking the sea. Umlalazi is known as “the place of the whetstone” because of the whetstones (for sharpening spears) that were obtainable there.

3.2 Location and Extent of the Nature Reserve

The Siyaya Coastal Park is the collective name for the Umlalazi Nature Reserve, the Amatikulu Nature Reserve and the Redhill Nature Reserve (the Talmage Pan Nature Reserve was included until its de-proclamation in 2003) and extends from the northern boundary of the Umlalazi Nature Reserve to the southern boundary of the Redhill Nature Reserve (approximately 37 km in length). The two nature reserves are not contiguous due to the de-proclamation of the Talmage Pan section of the Siyaya Coastal Park in 2002 (Provincial Notice 5 of 2002), however the beach connection remains.

The co-ordinates of UNR are -28°56'06.490"S to -29°03'16.934"S and 31°39'45.212"E to 31°49'13.249"E. The GIS flat surface area is 1469 ha and the boundary length of UNR is 47.8 km of which six km is fenced. The maximum height above sea level is 100 m and the minimum height above sea level is 20 m.

The Siyayi River flows through the Nature Reserve, south of the Mlalazi River and ends in a lagoon surrounded by dune forest. The two main streams, the Amanzimnyama and Siyayi, drain the catchment and feed into a common lagoon (Refer to Map 2a).

3.3 Previous Land Use

Land use prior to proclamation included private holiday dwellings, a private hotel and untransformed natural land.

3.4 Conservation History of Umlalazi Nature Reserve

Portions of the Umlalazi Nature Reserve was proclaimed under the Nature Conservation Ordinance (Act No. 15 of 1974) while other portions were proclaimed as follows:

- Proc 13 / 1948 under Ordinance 35 / 1947
- Proc 50 / 1950 under Ordinance 35 / 1947

Individual properties were proclaimed at different times within the Nature Reserve. The reserve was proclaimed as it was felt that the then Natal Parks Board was in a better position to control the malaria mosquito's in the Mlalazi River than the Local Health Authority. After proclamation, the Natal Parks Board was the appointed management authority for KNR. The Natal Parks Board and the KwaZulu Bureau of Natural Resources then amalgamated to become the KZN Nature Conservation Service, also known as EKZNW. Policy decisions are made by the KZN Nature Conservation Service (NCS) to give effect to its Mission, and to provide staff with a standardised position and framework regarding matters of general applicability.

Challenges that the reserve have encountered since proclamation stem from the introduction of zebra, as every year the herd stallions kill the new born foal or evict the previous year's foal from the herd which results in animals leaving the reserve. As a result, the herds have never increased to above eight individuals. Other key challenges that the UNR has encountered, and is in the process of addressing, includes alien plant invasion, soil erosion, siltation, natural disasters, land transformation (services through the Protected Area), shortage of finances, illegal grazing and opposition from some of the surrounding communities.

Action Project 3.4 (i): Update the Conservation History for UNR indicating the importance of the proclamation.

3.5 Climate and Weather

The climate is humid and warm-to-hot, with a year-round rainfall. The rainfall is extremely variable in time (months, years, cyclic in the longer term) and also varies spatially across the different catchments. The mean annual air temperature at the Cape St Lucia station in the north-east is 21.6°C. Warm and oppressive weather conditions dominate the summer months, while winters are cooler. The prevailing surface winds along the KwaZulu-Natal coast are north-easterly and south-westerly, flowing roughly parallel with the coastline and almost equally divided in frequency and velocity. They are spread fairly evenly over the 12 months of the year. Wind velocities are subject to strong diurnal variations, with daytime winds being significantly stronger than those at night. Gales from the south are generally experienced from September to November.

Action Project 3.5 (i): Maintain the collection and storage of climatic data records. Include the Mean Annual Rainfall for UNR.

3.6 Physical Description

3.6.1 Topography

From the Mlalazi Estuary to the Tugela River mouth, the coastal plain is absent and instead a series of Holocene beach ridges form a pro-grading shore at the margins of subdued hills. A comparatively shallow continental shelf terminates some 40 km offshore with a pronounced slope change at depths of between 90 and 135 m.

3.6.2 Geology

In the catchment, Natal Group Sandstone (formally table mountain sandstone) and Archean granite dominate the region. In the vicinity of the estuary, formations of Ecca and Cretaceous deposits (sandstone and shale) occur, which are said to be Miocene beds (calcareous sandstones).

3.6.3 Soils

Sandy loam of marine origin. There is a high content of clay and humus found in the wetlands.

Action Project 3.6.3 (i): Identify the biodiversity importance and implications of immature soil profiles for management.

Action Project 3.6.3 (ii): Map the soils showing areas susceptible to erosion, and develop appropriate mitigatory measures.

3.6.4 Geomorphology and Landforms

The soils of the two sub-catchments, the Siyayi and Amanzimnyama, strongly reflect the influence of the parent material from which they are derived. The following section is mostly a summary of Garland (2003) and van der Elst *et al.* (1999).

Soft coastlines are dynamic systems consisting of mobile dunes fronted by sandy beaches facing the sea. Wind, tides, waves and near-shore currents combine to ensure that sand continually cycles between dunes, beaches and near-shore underwater sand banks. It is important that this is a prograding coastline (ie, this coastline is building out into the sea). This is the only prograding system in South Africa. Certain wave conditions can lead to shoreward movement of sand from the near-shore zone and the build up of beaches. Stormier periods will result in beach erosion or even total removal, in which case the base of the mobile dune system may also be attacked and eroded by waves. Disturbance of dunes stabilised by vegetation will result in blow-outs, especially when the disturbances are aligned with prevailing wind directions. This effectively creates a wind tunnel, which results in further widening of the tunnel and ultimate destruction of the dune, with much of the sand ending up in near-shore sand banks, where it will stay until a constructive period of accretion ensues. There is a constant cycle of destruction and accretion,

which will be influenced by sea level drops or rises, storm events, rip currents and sand deposits from rivers and estuaries.

Both coastal current and near shore circulation systems favour a north-westward movement of materials along the southern Zululand coast, with strong onshore components added. During the winter dry season, strong littoral drift creates barrier beaches across estuaries, which are often breached during the summer rainy season. The materials contributing to dune growth and, hence, spit formation, come primarily from the high sediment loads brought down seasonally by the Zululand rivers, particularly the Tugela. Dune advancement is encouraged by the formation of phytogenic dune ridges, where the dune pioneer, *Scaevola thunbergii*, acts as a sand trap, once established on the beach, seaward of the foredune.

Several factors are contributing to the development and growth of a sand spit at the Siyaya mouth. Firstly, there has been a change in alignment of the shore opposite Siyaya, from 45° to almost 90° north-east, which in turn has induced changes in littoral drift capacity. Secondly, there are the nearly unidirectional energy flows and heavy material inputs (mostly fluvial) from the south-west, all factors contributing to spit growth. The spit extended by somewhere between 740 and 785 m in a north-easterly direction in the period 1937 to 1977, with a simultaneous progradation of the shoreline by just over 120 m. A succession of beach ridges has thus been formed over these recent and many previous years. The growth of the spit has not been consistent, but the rate has fluctuated over the years.

3.7 Hydrology

There are two wetlands found within the UNR. Due to proximity of the sea, rivers and the soil types and their deposition, the hydrology of the area may be complex and requires investigation.

Action Project 3.7 (i): Investigate the hydrology of the UNR, identify threats to its ecological functioning and propose mitigatory measures.

3.8 Estuarine, Intertidal and Marine

3.8.1 Estuarine Ecology

The Siyayi Lagoon is situated in a well-conserved, scenically beautiful forested-dune landscape. It extends from the confluence of the two streams to the lagoon mouth. It has a surface area of ± 8 ha and an axial length of 2.6 km. Between 1937 and 1977, the mouth of the Siyayi Lagoon moved about 740 m north-eastwards, in pulsating movements, at an average rate of 17.4 m/year. It was estimated that the mouth was closed for 96 % of the time, with possible overtopping by high spring tides. There is no record of the mouth ever having been opened artificially (Begg, 1978). The mouth is breached only after a major rainfall event and then only for a few days. Between April 1981 and February 1984, no breaching of the sandbar occurred. The floods of 1984 (Cylones Domoina and Imboa) removed the substantial sandbar which had built up, opening the river mouth and allowing for subsequent, more regular breaching for a period. However, not even these floods removed the accumulated silt in the lagoon. The reed beds withstood the floods well and more siltation has taken place since.

Land encroachment into the Siyaya Lagoon has increased markedly since circa 1946. The depth of the lagoon has also been substantially reduced. There are two wetlands found within the Nature Reserve.

Umlalazi was ranked twentieth in overall conservation importance out of 250 South African estuaries, 10th for birds and 5th for fish. It was listed as the thirteenth most important in terms of the minimum set of 33 estuaries required to be able to maintain South African Estuarine Biodiversity (Turpie, *et al*, 2002). It is rated as irreplaceable and mandatory in achieving KZN's biodiversity targets

Action Project 3.8.1: Investigate the estuarine ecology and functioning within the UNR, and develop a management plan to mitigate against threats to its healthy functioning.

3.8.2 Intertidal Ecology

This section is a summary of Clark (2003).

The intertidal environment is generally accepted as extending from the lower limit of spring low tides up to the upper limit of spring high tides. This is a narrow strip of shoreline that is highly dynamic in nature. It experiences the full force of waves breaking on the shore, the zone of maximum impact depending on the height of the tide. In the case of the Siyaya Coastal Park, the intertidal shoreline is comprised exclusively of steeply inclined, coarse-grained sandy beaches. Three estuaries intersect the shore within the Siyaya Coastal Park, the Mlalazi, the Siyayi and the Amatikulu/Nyoni. The species composition and abundance of intertidal fauna and flora in the intertidal zone of the beach may vary due to the influence of riverine input at these sites.

Action Project 3.8.2 (i): There is the need to further investigate the intertidal ecology (in consultation with ORI and other relevant institutions) and to develop a specific management plan for this zone.

3.8.3 Marine Environment

The Marine Environment plays an important role in this prograding coastline and requires further investigation.

Action Project 3.8.3 (i): Investigate and include the coastal and marine environments (in consultation with ORI and other organisations) and develop specific management actions as appropriate.

3.9 Flora

Vegetation Types

The Indian Ocean Coastal Belt (IOCB) occurs as a narrow coastal strip along Africa's eastern seaboard, and is characterized by a flat or gently rolling landscape. The IOCB has strong subtropical floristic elements, linked along the coast to the tropical regions of East and Central Africa. In South Africa, the IOCB stretches from the Mozambican border south to the Great Kei River, and it is the region 'that feels the breath of the Tropics the most' (Mucina and Rutherford, 2006). In terms of biomes, the IOCB encompasses grassland, savannah, wetlands and forest, with all four frequently interspersed in a complex vegetation mosaic. Many of the vegetation types occurring within the IOCB are threatened to a greater or lesser extent, primarily due to the high population densities in the region.

Occurring in Umlalazi Nature Reserve are the following:

The Maputaland Coastal Grassland (567 ha) is an Endangered vegetation type in KZN, with over 68% of the grassland transformed. Lying within a PA, the major threat to the grassland is the invasion by alien plant species, of which *Chromolaena odorata* is the main problem. Bush encroachment is a further threat, however, one that may be controlled by appropriate burning regimes.

The three forest types occurring in the NR are all relatively well protected within KZN, and as such are classified as Least Threatened. In order of the area that each forest occupies in UNR: KwaZulu-Natal Dune Forest (381ha) is a species-rich subtropical coastal forest, and in UNR hosts a number of Red data listed fauna (2 birds and a mammal), making it an important vegetation type to safeguard. Mangrove Forests (24ha) occur in the tidal zone of coastal lagoons and estuaries, where they experience regular inundation by sea water. These forests are species-poor and frequently characterised by a single tree species. Mangroves however provide essential habitat for the Mangrove kingfisher (Vulnerable), as well as providing a nursery ground for numerous marine or estuarine fauna. Swamp Forest – *Ficus trichopoda* (0.5ha) occupies sites with permanently waterlogged soils, and the forest has a distinct canopy and shrub layer, in this case dominated by *Ficus trichopoda*. The most serious threat to this forest type is a change in the local hydro-geological conditions.

Wetlands occupy approximately 10% of UNR and comprise Subtropical Freshwater Wetlands (144ha) and Subtropical Alluvial Vegetation (1ha). Wetlands perform a number of vital ecosystem services such as improving water quality (they act as sediment sinks and filter excess nutrients) and aiding atmospheric equilibrium (they store significant carbon in plant biomass).

Coastal vegetation, found in the interface between the beach and inland (and thus under the influence of the ocean *i.e.* sea water, salt spray, dune formation) is collectively termed Seashore Vegetation. In UNR, the vegetation type is Subtropical Seashore Vegetation (113ha), which is characterised by grassy, herbaceous or dwarf-shrubby pioneer species, often monotypic in nature.

Conservation Targets:

- Maputaland Coastal Grassland (Endangered): The provincial target is 25% of the original distribution for this vegetation type, however only 32% remains untransformed. Only 61% of the remaining 32% occurs within protected areas, and UNR safeguards 1% of this. The conservation target has **not** been met.
- Subtropical Freshwater Wetlands (Least Threatened): The provincial target is 24% of the original distribution for this vegetation type, however 80% remains untransformed. Only 56% of the remaining 80% occurs within protected areas, and UNR safeguards 0.3% of this. The conservation target has **not** been met.
- Subtropical Seashore Vegetation (Least Threatened): The provincial target is 20% of the original distribution for this vegetation type, however 81% remains untransformed. Only 71% of the remaining 81% occurs within protected areas, and UNR safeguards 4.8% of this. The conservation target has **not** been met.
- KwaZulu-Natal Dune Forest (Least Threatened): The provincial target is 69% of the original distribution for this vegetation type, however 93% remains untransformed. Only 68% of the remaining 93% occurs within protected areas, and UNR safeguards 2.4% of this. The conservation target has **not** been met.
- Swamp Forest – *Ficus trichopoda* (Least Threatened): The provincial target is 70% of the original distribution for this vegetation type, however 85% remains untransformed. Only 52% of the remaining 85% occurs within protected areas, and UNR safeguards 0.02% of this. The conservation target has **not** been met.
- Mangrove Forest (Least Threatened): The provincial target is 70% of the original distribution for this vegetation type, however 99% remains untransformed. Only 73% of the remaining 99% occurs within protected areas, and UNR safeguards 1% of this. The conservation target has **not** been met.

Priority Species

The following Red Data listed plant species occur in the Nature Reserve for which conservation targets are required.

- *Didymoplexis verrucosa* Vulnerable

Action Project 3.9 (i): Develop a plant species list. This list will be filed with the Conservation Manager at UNR.

Action Project 3.9 (ii): Compile and implement a flora management plan for UNR.

Action Project 3.9 (iii): Compile and implement a flora management plan that addresses the threats to the priority flora.

Action Project 3.9 (iv): Determine conservation targets for red data plants.

Action Project 3.9 (v): Investigate the functioning of and propose a suitable management strategy for the mangrove swamp.

3.10 Fauna

The EKZNW Biodiversity Database provides a relatively comprehensive list of the terrestrial fauna of the Umlalazi Nature Reserve. However, very little information is available regarding fish species present. Species checklists will be updated as data becomes available (**Appendix 1, Item 3**).

Action Project 3.10 (i) : Copies of the Species Checklists will be updated and filed manually and digitally at the UNR Management and Regional Offices as well as the Conservation Manager for easy reference. The copies will be updated in accordance with any authorised amendments. A fixed protocol for compiling and maintaining these checklists needs to be developed to ensure that they provide accurate, comparable and contemporary baseline data for management and scientific purposes.

Action Project 3.10 (ii): Investigate priority marine fauna in consultation with ORI and other relevant institutions.

Action Project 3.10 (iii): Compile a priority animal management plan.

3.10.2 Invertebrates

Invertebrates play critical roles in the functioning of all ecosystems as they are responsible for maintaining soil fertility, waste disposal, water purification, pest control, pollination and may even influence the structure of plant communities. In some cases the survival of locally endemic plant species may be linked to a single pollinator.

The EKZNW Biodiversity Database provides a limited invertebrate list. No Red Data species are currently listed.

Action Project 3.10.1 (i): Compile, through research and collecting a checklist of the invertebrate species found in UNR.

3.10.3 Fish

The EKZNW Biodiversity Database does not list any fish for UNR as no formal surveys have been undertaken. However, the catch recorded from illegal gill nets confirms the presence of at least 17 freshwater, estuarine and marine fish species. The possible species from unconfirmed identification include mullet spp, perch, moony (*Monodactylus* spp.), Razorbelly (*Hilsa kelee*), Spotted grunter (*Pomadasys commersonnii*), salmon (*Argyrosomus* spp), barbel/catfish spp. (*Clarias* spp.), *Tilapia* spp., Natal stumpnose (*Rhabdosargus sarba*), Nondi (*Johnius dussumieri*), kingfish spp., Concertina fish (*Drepane longimanus*), Cock grunter (*Pomadasys multimaculatum*), banana fish, soapies (*Secutor* spp.) and pike/barracuda (*Sphyrna jello*). The Blackthroat goby (*Favonigobius melanobranchus*), an Endangered and endemic species in KZN, and the Vulnerable Bearded eelgoby (*Taenioides jacksoni*) are predicted to occur in the Umlalazi estuary.

Action Project 3.10.2 (i): Complete a fish survey for UNR.

Action Project 3.10.2 (ii): Identify the major threats to priority fish in UNR and propose mitigatory measures.

3.10.4 Herpetofauna (Amphibians and Reptiles)

The presence/absence of certain frog and reptiles species is indicative of the state of health of an ecosystem. Furthermore, it is important to determine whether any rare species occur on UNR in order to determine management strategies to prevent their extinction from the Reserve.

Fifteen species of frogs/toads are listed as occurring in the Nature Reserve. The Pickersgill's reed frog (*Hyperolius pickersgilli*) is listed as Endangered. A secretive and seldom seen species, this coastal KZN endemic is found in thick reeds around coastal pans.

Sixteen species of reptiles are listed as occurring in the Nature Reserve; 9 snakes, 5 lizards/geckos, 1 terrapin and 1 crocodile. The African rock python (*Python sebae natalensis*) is listed as Vulnerable. This species inhabits a wide range of habitats, including savannah, woodland, grassland and forest, being particularly associated with areas of permanent water. It also readily adapts to disturbed habitats and may be found around human habitation.

Action Project 3.10.3 (i): Compile through further research and monitoring, check lists of the herpetofauna. Identify the major threats to Herpetofauna in UNR and propose mitigatory measures.

Action Project 3.10.3 (ii): Develop and implement a Herpetofauna Species Monitoring Programme.

3.10.5 Avifauna (Birds)

The EKZNW Biodiversity Database lists 327 bird species for the Nature Reserve. Of particular importance are:

Spotted ground-thrush (*Zoothera guttata*) Endangered
Umlalazi supports small numbers of primarily nonbreeding birds. This species is a local migrant, overwintering in coastal forests before returning to the inland scarp forests for the summer breeding season. UNR thus protects part of an area considered to be vital to the long-term persistence of this species, providing essential feeding grounds to maintain body condition before breeding.

Southern ground-hornbill (*Bucorvus leadbeateri*) Vulnerable
Ground-hornbills require a large area (ca. 100km² per group) in which to forage and find suitable breeding sites. The NR has ensured that protection is afforded to this species by safe-guarding suitable habitat in an area where habitat alteration due to development and human pressures are high.

Mangrove kingfisher (*Halcyon senegaloides*) Vulnerable
Umlalazi is an important non-breeding (winter) area for Mangrove kingfishers. To safeguard this species it will be necessary to protect their preferred habitat (mangroves) from degradation, of which siltation and impaired hydrological functioning are the main threats.

Pel's fishing owl (*Scotopelia peli*) Vulnerable
This species is suspected to breed in UNR, however there are no confirmed reports. These owls require large riverine trees and extensive wetlands in which to hunt, and it is thus important to maintain a healthy, functioning wetland system with an intact riparian forest.

Eastern bronze-naped pigeon (*Columba delegorguei*) Vulnerable
Although the Reserve may be marginal and not a breeding area, a population of Eastern bronze-naped pigeons has been recorded in UNR. Locally nomadic, this species moves between forests in response to fruiting trees (i.e. *Cassipourea*, *Trema* and *Halleria spp.*). Destruction of coastal forest creates habitat islands threatening viability of small populations. Loss of habitat quality through exploitation of forests, with firewood being removed, loss of favoured food trees and reduced number of nest sites is the primary threat.

Swamp nightjar (*Caprimulgus natalensis*) Vulnerable
The nightjar breeds in short coastal grassland habitat and forages over marshes, floodplains and grasslands. Eggs are laid on bare ground from August – December, and as such are susceptible to fire.

Grey crowned crane (*Balearica regulorum*) Vulnerable
Maintain the wetlands and the associated grasslands in the Reserve in a suitable state for the continued breeding and foraging of Grey crowned cranes. Cranes have large home ranges and the Reserve is too small to exclusively support a breeding pair, which will thus be influenced by the surrounding patterns of land use in the Mtunzini area.

African finfoot (*Podica senegalensis*) Vulnerable

This species is most at risk from clearing of riverine vegetation, as well as reduced water flow in catchments. It is therefore necessary to ensure perennial flow of rivers if this species is to persist.

Martial eagle (*Polemaetus bellicosus*)

Vulnerable

The Reserve contains suitable grassland for foraging of Martial eagle. However, the total area available for foraging is too small to support a breeding pair (require ca. 300 km²). The Martial eagle's persistence in this region depends on adjacent patterns of land use and transformation. The Reserve has some open woodland, preferred for nesting, although forest trees and pylons may be used. The ability of the region to support a breeding pair will depend on future habitat loss around the Reserve.

Southern bald ibis (*Geronticus calvus*)

Vulnerable

This species uses UNR strictly for foraging as there are no suitable cliff sites in the reserve for breeding purposes. It is important to maintain short grassland as foraging habitat for the ibis, although UNR is at the extreme of their distribution.

African marsh-harrier (*Circus ranivorus*)

Vulnerable

The wetlands in the reserve support breeding pairs of African Marsh Harrier.

Pink-backed pelican (*Pelecanus rufescens*)

Vulnerable

Maintain wetlands and river and estuarine functioning in order to provide foraging habitat for Pink-backed Pelican. Protect large riverine trees as potential breeding sites, although this species has never been recorded nesting in this reserve.

Cape gannet (*Morus capensis*)

Vulnerable

This is a marine species which breeds off the Cape coast and is only seen foraging along the coast near UNR. This species will be unaffected by any management protocol in UNR.

White-backed night-heron (*Gorsachius leuconotus*)

Vulnerable

This species relies on dense riparian vegetation. Thus in order to secure viable breeding and foraging habitat, it will be necessary to ensure adequate hydrological functioning of the Mlalazi River.

Corn crake (*Crex crex*)

Vulnerable

This is a non-breeding migrant to southern Africa, occurring in areas with suitable rank grassland, marshes, streams or seasonally flooded grassland.

Southern banded snake-eagle (*Circaetus fasciolatus*)

Vulnerable

This species is a shy and secretive species, generally found in coastal forest. Habitat loss is the primary threat to this species.

Action Project 3.10.4 (i): Determine which of the listed bird species breed in the Nature Reserve, and ensure that management protocols are set in place to maintain and conserve these breeding sites for the long - term persistence of the species.

Action Project 3.10.4 (ii): Identify the major threats to priority Avifauna in UNR and propose mitigatory measures.

Action Project 3.10.4 (iii): Develop and implement an Avifauna Species Monitoring Programme.

3.10.6 Mammals

The EKZNW Biodiversity Database lists 13 mammal species for the Nature Reserve. Red Data listed species include:

Sclater's forest shrew (*Myosorex sclateri*) Endangered
A northern KZN endemic, this species has been recorded from grassland, wetland and forest habitats. There is currently very little information regarding the general biology of this species.

Makwassie musk shrew (*Crocidura maquassiensis*) Vulnerable
This is the least known of all the musk shrews, and very little is known about its general biology. Sites where it has been recorded are grassy slopes, and rocky areas.

Action Project 3.10.5 (i): Conduct a full inventory of mammals occurring in UNR.

Action Project 3.10.5 (ii): Identify the major threats to priority mammals in UNR and propose mitigatory measures.

Action Project 3.10.5 (iii): Develop and implement a Mammals Species Monitoring Programme.

3.11 Cultural Heritage

UNR's cultural resources include:

- John Dunn's pool
- The Indaba Tree where John Dunn supposedly held his meetings with his Izinduna
- Iron Age Sites

Bona Fida researchers are allowed to view sites with the provision of obtaining permits from Ezemvelo KZN Wildlife or AMAFA.

Action Project 3.11 (i): Map the GPS Co-ordinates and provide Management Plans for these sites.

Action Project 3.11 (ii): Identify the archaeological, historical, paleontological and cultural heritage sites at UNR. Ensure compliance with requirements of heritage legislation.

3.12 Socio-cultural History

In 1854, John Dunn was employed as a Border Agent, watching the Lower Drift of the Thukela River and reporting on traffic to and from Zululand. This gave him status in Zululand, where he was known as "Jantoni". With him was Catherine Pierce, a young coloured girl, who became his common-law wife. Dunn gained the trust of Cetshwayo, who felt the need for an official advisor to guide him in relations between his kingdom, the Boers (Amabhuno) and the British. Dunn was granted the full rights of a chieftain and a large tract of country along the coast, north of the Thukela. The land had been thinly populated since the conflict between Cetshwayo and Mbuyazi, and the area was a hunter's paradise.

During the Anglo-Zulu War, Dunn tried to remain neutral, but Lord Chelmsford threatened him with a charge of treason and he eventually fought on the side of the British. After the war he was appointed chief of one of the largest chieftaincies of the fragmented Zulu kingdom under British control.

Dunn's land was roughly the present magisterial district of Mthunzini. He established his authority over it by dividing it into areas, each under the control of a favourite induna or headman. As Chief, he was responsible, with advice from his izinduna, for settling disputes and imposing sentences on transgressors. He held court sittings under the biggest red milkwood tree in the area in what is now the Umlalazi Nature Reserve. He also held celebratory gatherings like weddings there. He built a pole fence around the tree about 10 ft from it and filled the enclosure

with anthill sand, which was carried from five or six miles away by ox-wagon. The sand was stamped to provide a very hard floor, and seats were placed around the tree. This tree was, and is still, known as the Indaba Tree and the site is marked with a plaque.

Within the mangrove trail at Umlalazi, the remains of a pool is still to be found, which was dug in order to provide a safe swimming area for Dunn's wives as there were many crocodile and hippo in the vicinity at the time.

As a result of his actions during the war, Dunn was regarded as a traitor by Zulu speaking people outside his clan, and by Cetshwayo.

Dunn died on 5 August 1895, after a short illness. On his death, 49 wives and 116 children figured in his will. However, as there was no successor, a power vacuum existed in the area. On 1 October 1895, a temporary magistrate's post was created at Mthunzini. This date represents the "official" birth of the town and it therefore celebrated its centenary in 1995.

Today, Dunn's descendants form a distinct community in the Mangete area of Zululand. In 1985 a service of reconciliation and renewed friendship between the Zulu royal family and Dunn's descendants was held at Dunn's Mangethe homestead. At that ceremony, busts of Cetshwayo and Dunn were presented by Dan Dunn to King Goodwill Zwelithini, on behalf of Dunn's descendants. These busts are housed at the Ondini Zulu Cultural Museum near Ulundi.

The Raffia Palm grove that is found just outside the Nature Reserve in Mthunzini was planted by C.C. Foxon, then magistrate of the District, in about 1903. The original seeds came from Maputaland, where they had been introduced from further north by Portuguese Missionaries. The grove is a national monument. They provide roosting for Egyptian fruit bats and fruit and nesting for Palmnut Vultures.

Action Project 3.12 (i): Conduct research on the archaeology of the UNR.

Action Project 3.12 (ii): Make use of archaeology and evidence of the past cultures inhabited the area in describing the cultural heritage value of UNR.

3.13 Sociological Context

The Nature Reserve is partially surrounded by the town of Mthunzini which has high and middle income residential developments, commercial farms and forestry (Mondi) and three traditional, namely Mkhwanazi, Mathaba and the Zulu speaking people. The reserve is further bordered by the Mlalazi River and the Indian Ocean.

Action Project 3.13 (i): Update the sociological context and its importance to UNR.

3.14 Economic Context

The Nature Reserve contributes to the economy in the following ways:

Recreational activities that are offered by UNR include:

- Self guided trails;
- Swimming;
- Camping;
- Canoeing;
- Mountain bike (cycling) – restricted to intensive use areas;
- Angling;
- Boating/ sailing
- Bird watching;
- Picnicing; and
- Water skiing

Facilities and services that are offered by UNR include:

- Overnight accommodation and braai facilities;
- Employment opportunities to the local community for the eradication of alien plants; and
- The levy which is used for the upliftment and development of the local community
- Proximity of the Nature Reserve encourages people to take up permanent residence in the area

Ecosystem services that are provided by UNR include, but are not restricted to:

- Recreational experiences (ecotourism)
- Cultural tourism
- Meeting people's sense of cultural, spiritual and intellectual needs
- Water filtration
- Regulation of ground water and river channel flow
- Seed dispersal
- Maintenance of soil health
- Prevention of soil erosion
- Potable drinking water to the surrounding communities
- Recreational experiences (ecotourism)
- Nutrient cycling
- Climate regulation
- Carbon sequestration
- Estuarine fisheries

Action Project 3.14 (i): Update the economic context and its importance for UNR.

3.15 Developed Infrastructure

It is imperative that the necessary appropriate standard of infrastructure be maintained to support the effective management of UNR and promote eco-cultural tourism to the reserve. Possible future infrastructure development will be detailed in the UNR Concept Development Plan (see **Par 6.11**).

Action Project 3.15 (i): Identify and map infrastructure using GIS and include in a spatial database. Develop standard protocols and procedures for infrastructure in UNR.

Action Project 3.15 (ii): Repair, where necessary, the existing infrastructure provided in the UNR.

3.15.1 Eco-cultural Tourism Infrastructure

Eco-cultural Tourism Infrastructure in the Park consists of:

- 13 Chalets and ablution facilities
- 50 Campsites
- Two picnic sites with ablution facilities
- Fishing and boating area (two public launching sites, one a slipway and the other a beach site)
- Whales can be viewed from the platform at the end of the new boardwalk
- One beach boardwalk
- 10,3 km of self guided trails

Action Project 3.15.1 (i): Undertake analysis of available recreational facilities. Repair and maintain recreational facilities as required.

3.15.2 Management Infrastructure

Management infrastructure consists of:

- Conservation Managers house (3 Bedroom) with ablution facilities
- Two staff accommodation units with ablution facilities

- One workshop
- Park home (Conservation Managers office)
- The main administrative office with ablution facilities
- Laundry
- Camp Managers house and ablution facilities
- Hospitality Managers house with ablution facilities
- Swimming pool
- One lapa
- One gas shed
- One boat shed

3.15.3 Bulk Infrastructure:

Bulk infrastructure consists of:

- 4.33 kilometers of roads and vehicle tracks (2.33 kilometers of management tracks and two kilometres of public road).
- One waste management site (solid waste is collected by a private company and removed).
- One sewerage plant outside the reserve (the reserve is not connected to this sewerage plant).
- One informal helipad.
- The Municipality provides water.
- Eskom provides electricity.
- A Telkom line is available at the reserve.
- Neotel and Seacom cables have been installed through and beneath the Nature Reserve.

Action Project 3.15.3 (i): Establish flight paths for the helicopter for emergency purposes.

3.15.4 Conservation Infrastructure

Other conservation infrastructure outside the developed centres consists of:

- 10.3 km of self-guided hiking trails
- No internal fences
- The perimeter boundary fences total length is approximately six kilometers. The existing boundary fence is generally 1.8 m high.

3.15.5 Water Supply Infrastructure

Water is supplied by the Municipality as a service to the UNR. All water supply infrastructures must be appropriately screened or camouflaged to reduce its potentially detrimental aesthetic impact. For management purposes it is essential that all water supply infrastructure be indicated on the reserve map.

Action Project 3.15.5 (i): Update UNR Map to include the location of all water supply infrastructure.

3.15.6 Infrastructure Maintained by other Organisations

Water and electricity are public services provided by the local municipality and Eskom respectively. Solid waste is collected and disposed of by a private company. Security at the main gate is also an outsourced service. There is a telephone line that is provided by Telkom.

Action Project 3.15.6 (i): Compile MoA between different service providers and UNR. Protected area manager needs to ensure that he is familiar with all agreements.

4 MISSION STATEMENT, MANAGEMENT OBJECTIVES AND CONSERVATION TARGETS

4.1 Introduction

Ezemvelo KwaZulu-Natal Wildlife has a legislative mandate which rests the custodianship of biodiversity conservation within the organisation. In alignment with this mandate, EKZNW has adopted a Five Year Strategic Plan and Performance Plan for 2009-2014 (Appendix 1 Item 1) which has identified the following corporate Vision, Mission, Goals and Core Values (see Text Box below):

EKZN WILDLIFE STRATEGIC VISION, MISSION, GOALS AND CORE VALUES	
VISION	
<i>“To be a world renowned leader in the field of biodiversity conservation”</i>	
MISSION STATEMENT	
<i>“To ensure effective conservation and sustainable use of KwaZulu Natal’s biodiversity in collaboration with stakeholders for the benefit of present and future generations.”</i>	
STRATEGIC GOALS	
<ol style="list-style-type: none">1. To conserve indigenous biodiversity in KwaZulu-Natal both within and outside of protected areas.2. To be a sustainable, well resourced and capacitated biodiversity conservation and ecotourism organisation.3. To foster the value of biodiversity conservation with stakeholders.4. To be an efficient, effective and compliant organisation with good governance.5. To effectively promote the mandate of the organisation to stakeholders.	
CORE VALUES	
Integrity	– at all times we act morally, ethically and with honesty.
Respect	– we treat stakeholders with patience, politeness and acknowledge and value their right and those of the environment.
Accountability	– we involve stakeholders in the organisation’s activities with a culture of openness and are answerable for the outcome of our actions and activities.
Team Work	– working together to achieve our vision through goals.
Innovation	– an adaptable organisation that embraces the culture of creativity and learning.
Excellence	– we are a progressive organisation applying best practices to achieve the highest quality and standards.
Commitment	– at all times we undertake our activities with passion, loyalty and dedication.
Productivity	– we undertake to produce results timeously, efficiently and effectively.

Cognisant of EKZNW’s legislative mandate as well its corporate Vision, Mission, Goals and Core Values, this UNR Integrated Management Plan (IMP) has been developed in consultation with stakeholders.

4.2 Stakeholder Participation

The public participation process followed in developing this IMP included public meetings with stakeholders and management staff, resulting in the development of the draft IMP. The draft IMP was then reformatted into a standardized EKZNW IMP format and advertised and distributed for further public comment. The document was then finalized while undertaking further consultation. The details of the public participation process for this IMP's development is contained in the Public Participation Report (see **Appendix 1, Item 7**).

Action Project 4.2 (i): Establish neighbour liaison forums.

Action Project 4.2 (ii): Formalise relationships with municipal forums.

Action Project 4.2 (iii): Implement EKZNW IEM policy and create awareness of/or inform surrounding landowners on the IEM Process and legislation.

Action Project 4.2 (iv): Participate as a key stakeholder in EIA applications for developments near the reserve that may impact on the protected area.

4.3 Vision of UNR

The Vision of the Umlalazi Nature Reserve is:

“A consolidated, managed and legally protected Nature Reserve that contributes to the achievement of biodiversity targets, and provides sustained and tangible benefits to visitors, neighbours and the metropolitan area through the provision of appropriate access to the cultural and natural resources”.

4.4 Mission of UNR

The Mission of the Umlalazi Nature Reserve is:

“To sustainably manage and conserve the natural and cultural resources of the Umlalazi Nature Reserve, based on sound environmental principles and management, for the benefit of both visitor and local communities in an equitable manner.”

4.5 Management Objectives

Management Objectives for UNR were not set out according to ranking:

- Conserve rare and endemic ecosystems and species.
- Conserve the Umlalazi Nature Reserve and its associated biodiversity and maintain its developed infrastructure.
- Contribute to sub-regional eco-tourism initiatives.
- Contribute to the achievement of National and Provincial conservation targets.
- Facilitate controlled access to cultural heritage sites.
- Facilitate environmental and cultural education and awareness, including access to historical information related to the history of the reserve and the surrounding area.
- Identify and control threats to biodiversity.
- Minimise threats to the sense of place (retain the aesthetic value of the area).
- Participate as a key stakeholder in local environmental management initiatives.
- Play a key role in local eco-tourism initiatives.
- Play a notable role in local, regional, national and international conservation initiatives.
- Promote and encourage community involvement in biodiversity conservation.
- Promote and ensure effective communication between the local communities and EKZNW through integrated, shared and co-operative working relationships.
- Promote conservation as a viable and sustainable land use option.

- Promote supervised access to the Nature Reserve and its resources, both natural and cultural, and promote responsible use of the facilities by the public.
- Provide appropriate recreational opportunities.
- Safeguard the archaeological, historical, palaeontological and living cultural heritage of the Nature Reserve.

The above objectives were aligned with the following overarching Management Objectives for UNR (not ranked in order of priority):

- **Conservation** of key biodiversity features, biophysical processes, landscapes, abiotic, historical and archaeological resources
- The provision of **socio-economic benefits** (benefit flow) to the Reserve's neighbours and to contribute to the local economy and the efforts of conservation in a sustainable manner based on sound business principles (EKZN Business Plan)
- The provision of appropriate ecotourism **business** opportunities in the natural and cultural environment based within the influence sphere of UNR
- The formation of functional **partnerships** to integrate the UNR with regional development plans and other initiatives which underwrite the vision of UNR

4.6 Conservation Targets

In order to assist in developing a conservation management strategy more effectively linked to budget and resources, it is necessary to have specific conservation objectives (or 'targets' in conservation planning terms) in place. Monitoring of status relative to these targets will then allow for measurement of success of management interventions (and consequent budget and resource adjustments where required), and to trigger management interventions when certain thresholds are reached. This removes the 'monitoring to extinction' problem that has arisen in many organisations.

Apart from the need to monitor the success of implementation of the strategy in terms of achievement of conservation targets, a basic requirement for a systematic approach to conservation planning, impact assessment and protected area management effectiveness assessment is the identification of a clear set of provincial goals for the province, which for operational use needs to be translated into a more specific set of quantitative 'targets' (Margules & Pressey 2000). A key (but faulty) assumption often made with provincial Systematic Conservation Plans in terms of conservation priorities outside the protected area network is that protected areas continue to conserve key species and habitats at the same levels at which they occurred when the plan was developed. Where protected areas have failed to do so, it will result in an underestimate of conservation requirements outside protected areas and hence the real possibility of provincial conservation objectives and targets not being achieved. It is therefore essential to design and implement management and monitoring strategies to ensure that UNR continues to conserve those species and habitats which are important at a provincial level.

Conservation targets for biodiversity are not easily set, and indeed, conservation managers, scientists, decision makers and politicians have been reluctant to formalise and agree to targets. In reality our understanding of 'how much is enough', in what spatial configuration this should be, what the most critical processes are for the maintenance of biodiversity and how one will conserve these is poor, and the debate and research around this topic will continue for some time to come. This information will be continuously updated over time as our knowledge of area, connectivity and other process requirements improves for the conservation of ecosystems, communities and species. However, management has to take place despite these deficiencies so it is necessary to make best use of available information, stating the assumptions and limitations, and to see conservation targets as a set of working hypotheses around which conservation planning and evaluation will take place. Another advantage of developing strategies around targets is that this process serves to highlight the critical knowledge deficits thus guiding future research and monitoring priorities.

Conservation Targets for the Reserve

Specific conservation targets for the UNR are required to develop a strategy linked to budget and resources, to allow for monitoring and evaluation, as well as policy improvement.

Conservation targets for the Umlalazi Nature Reserve are presented in Table 1:

Table 1 : Biodiversity Targets for UNR.

Element of Concern	Key Attribute (Threats)	Indicator	Current Status	Target
Conserve the endangered and critically endangered veld types in UNR.				
The Maputaland Coastal Belt is endangered.	<ul style="list-style-type: none"> The provincial target is 25%, however only 31.8% is untransformed. Only 61.36% of this vegetation type remains within protected areas. Decline .of veld type 	<ul style="list-style-type: none"> Arson Fires. Cattle grazing. Incorrect burning practices. Alien species invasion. Bush encroachment. Illegal harvesting. 	<ul style="list-style-type: none"> UNR contribute 0.73 % to the provincial remains. The target is to maintain the current extent and where possible, to increase its representation within the protected area system. 	TBD
To conserve rare and endemic ecosystems and species.				
<ul style="list-style-type: none"> <i>Favonigbus melanobranch us</i> is an endangered. fish 	<ul style="list-style-type: none"> Decline or loss of species. Shrinking population numbers. 	<ul style="list-style-type: none"> Illegal gill netting and poaching. Pollution. Loss of suitable habitat. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Hyperolius pickergilli</i> is an endangered. amphibian 	<ul style="list-style-type: none"> Decline or loss of species. 	<ul style="list-style-type: none"> Loss of suitable habitat. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Zoothra guttata</i> is an endangered bird. 	<ul style="list-style-type: none"> Decline or loss of species. 	<ul style="list-style-type: none"> Loss of suitable habitat. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD
<ul style="list-style-type: none"> <i>Myosorex sclateri</i> is an endangered mammal. 	<ul style="list-style-type: none"> Decline in population of species. 	<ul style="list-style-type: none"> Decrease in condition. Increase in poaching. No recruitment. 	<ul style="list-style-type: none"> UNR needs to conserve this species in good condition 	TBD

Action Project 4.6 (i): Set conservation targets and monitoring strategies for the identified species and system.

Action Project 4.6 (ii): Develop conservation targets and monitoring strategies for Cultural, Business and Partnerships Objectives.

5 ZONATION

Zonation Categories

The Recreational Opportunity Spectrum (ROS) has been used for zoning of the Park. This system was developed by the United States Forest Service and is used to zone protected areas in KZN by EKZNW.

The ROS system enables the protected area to be zoned, in context, according to seven categories. These categories are spread along a continuum, from Wilderness to rural recreational development namely: Pristine Wilderness, Primitive Wilderness, Semi-Primitive Wilderness, Semi-primitive Non-Motorised, Semi-Primitive Motorised, Roaded Natural and Rural.

Each category within the ROS is defined in terms of activity, setting and experience opportunities. The ROS zonation system recognises and reflects:

- the sensitive features associated with the Protected Area (*i.e.* biophysical, cultural and sense of place)
- the range of existing and potential visitor experiences in and surrounding the Protected Area.
- the influence of existing development and use on these features and experiences
- the opportunities and constraints (biophysical, social or managerial constraints) for use
- the existing / potential threats to the Protected Area either within or adjacent to the Protected Area
- the opportunities for extending the Protected area and linking with surrounding reserves, conservancies and open spaces

As a result, the final management zonation is a composite of ecological zonation (based on natural and cultural resource sensitivity), sense of place, cultural features, patterns of environmental settings, and existing development and use patterns. The final zonation map is represented as a desired state, *i.e.* directing management towards a vision for each zone, which reflects and respects the broader conservation and ecotourism objectives for the reserve.

A zonation table (Appendix 3) detailing the boundaries and rationale for each zone, as well as the zone's natural and cultural features supports the zonation map. Biophysical features that are readily located on the ground have been used to demarcate and delineate the zone boundaries. The zones are indicated spatially on Zonation Map 3. These zones are recognised in UNR, these are given in Appendix 3.

(Source: ROS User Guide, United States Forest Service, as in the Advanced Wilderness Course Manual)

Action Project 5 (i): Revise the existing UNR zonation plan in accordance with the new EKZNW standard zonation system as soon as it is developed and approved.

6 OPERATIONAL MANAGEMENT POLICY FRAMEWORK AND GUIDING PRINCIPLES

The following predominant existing or potential threats to the Nature Reserve have been identified:

- Inadequate financial and human resources.
- Illegal activities in and around the Park (arson fires, cattle grazing, vehicle access, incorrect burning practices and bush encroachment).
- Catchment degradation disrupting natural ecological processes as the catchment is on the outside of the park boundary (water abstraction, silt and chemical pollution and water pollution).
- Alien species invasion.
- Adjacent communities that are not supportive of the Park.
- Vandalism.
- Poaching of marine and terrestrial natural resources (genetic in-breeding due to shrinking population numbers, loss of suitable habitat bordering the Nature Reserve and animals feeding on poisoned carcasses).
- Pressure on re-opening the river mouth once it closes. Closing of the river mouth is a natural process but this has to be breached through the use of artificial processes to open the mouth. This is occasionally necessary for conservation/maintenance of the mangrove community.
- Pollution (vessel and sewage). UNR is a polluter with raw sewage which regularly runs from the ablution block directly into the mangroves at the main estuary parking area.
- Proposed development on the boundaries of the Nature Reserve.
- Fences missing either as a result of theft or non-existence.
- Illegal gill-netting

The UNR policy framework, guidelines and strategies have been developed to support the achievement of the stated Nature Reserve management objectives and where possible to address the existing or potential threats as listed above.

6.1 Financial and Human Resources

6.1.1 Financial Resources

Capital and operational funding for UNR is sourced primarily from the KwaZulu-Natal Provincial Government. Funding is furthermore generated from commercial operations within the Park and various external sources. Levels of funding have remained stable, however, over time the management of the Nature Reserve cannot be sustained at required levels and capital assets, including infrastructure, are not being effectively maintained.

It is necessary therefore to develop a realistic five-year Strategic Management and Business Plans in an attempt to secure funding to effectively support the achievement of the mission and management objectives for the Nature Reserve. The development of a UNR Business Plan is a priority and will indicate past income and expenditure trends, a five year projection of income and expenditure targets that will allow for effectively achieving the UNR management objectives. In addition, planning will be put in place to address any budget shortfalls after the annual grants from the KwaZulu-Natal Provincial Government have been accounted for.

The total self-sufficiency of commercial operations within the Nature Reserve is a minimum requirement, while it will be expected that commercial operations will respect the natural and cultural heritage values of UNR and that any operational profit will be used to subsidise the Nature Reserve's conservation and community programmes. The value of ecosystem services that UNR provides as well as the direct and indirect economic value of the Nature Reserve to the local and regional economy will be determined in order to market the Nature Reserve, ensure continued government funding and where appropriate, leverage additional funding from other sources.

Action Project 6.1.1 (i): Develop a five-year Strategic Management Plan and Business Plan for UNR.

Action Project 6.1.1 (ii): Initiate a resource economics study of the Nature Reserve to determine its economic value regarding the provision of ecosystem services and its contribution to the local and regional economy.

6.1.2 Human Resource Capacity

The existing human resource structure and capacity is insufficient to fully meet UNR Management Objectives. The following objectives in particular are emphasised:

- Safe and secure environment for staff and visitors.
- Cultural heritage management.
- Efficient and profitable tourism management.
- Effective conservation and sustainable use of the biodiversity and landscape.
- Stakeholder liaison.
- Environmental education and awareness programmes.
- Training of staff

In order to effectively address the full spectrum of UNR management functions it is imperative that the human resource needs are fully investigated with a view to developing a new and effective human resource structure for UNR.

To improve accountability, efficiency, co-ordination and reporting significantly an option would be to consider a staff structure situated under a single Nature Reserve Manager. This investigation needs to be undertaken urgently in order to inform the UNR Business Plan.

Action Project 6.1.2 (i): Investigate and develop an appropriate human resource structure and capacity of UNR with a view to improving effectiveness and efficiency in achieving UNR objectives and informing the Business Plan.

6.1.2.1 UNR Employment Policy Guidelines

The UNR Management Committee will always be informed in advance of impending recruitment of staff.

- Appointments will be made in accordance with the:
 - relevant employment legislation;
 - employment policy framework of EKZNW;
 - required experience, skills, proven ability and qualifications of applicants.
- Entry-level or temporary appointments requiring no specific skills will be employed from neighbouring communities after consultation with the UNR Management Committee.

6.2 Local Community Involvement

EKZNW will strive to work collaboratively with institutions and adjacent landowners / communities to improve communication as well as conservation management in and around the Nature Reserve for the benefit of all. Neighbour relations and partnerships are guided by EKZNW Board Policies No. 4.8 and 4.11 (**Appendix 2**).

EKZNW encourages community involvement in the management of the Nature Reserve through collaboration with adjoining communities in the following programmes and projects.

Action Project 6.2 (i): EKZNW will continue to work collaboratively with landowners and surrounding communities to improve conservation management of UNR for the benefit of all.

6.2.1 Local Board

Community participation in the Nature Reserve is realised, mainly, through a Local Board which is established in terms of Chapter 5 of the KZNNCMA. The EKZNW Board Policy No.4.9 (**Appendix 2**) provides an operational relationship framework between the Nature Reserve and

its Local Board to ensure effective community participation in the management of the Nature Reserve. This Local Board must still be established.

Action Project 6.2.1 (i): Establish a Local Board for UNR.

6.2.2 Community Levy Trust Fund

Communities adjacent to UNR benefit from income generated by the Nature Reserve through a community levy paid by visitors. These funds are administered through the Community Trust Fund and provided to communities for development needs as prescribed by EKZNW Board Policies No. 4.16 and No. 4.6 (**Appendix 2**).

Action Project 6.2.2 (i): The Community Levy will continue to be collected for the development and upliftment of the local communities.

6.2.3 External Funding Projects

UNR procures external funding for specific Nature Reserve related projects; priority is given to training members of the community and the creation of community small, micro and medium enterprise (SMME) business and employment opportunities.

Action Project 6.2.3 (i): Training of members of the local community will continued to be practiced. Investigate other employment opportunities that will benefit the surrounding local communities of UNR.

6.2.4 Land Claims

There are no known land claims to UNR.

6.2.5 Environmental Education

It is EKZNW policy to provide environmental education programmes for communities adjoining UNR. These programmes will be conducted in accordance with **Board Policy No. D 2.34**. Access to the material and spiritual benefits of the Nature Reserve is facilitated in accordance with Neighbour Relations **Board Policy D 4.1** (See **Appendix 2**). Environmental education programmes are addressed further under **Par. 6.8**.

Action Project 6.2.5 (i): Investigate and implement additional environmental education programmes for the communities surrounding UNR.

6.2.6 Transfrontier Partnerships

UNR has no Transfrontier Partnerships.

6.2.7 Informal Participation

Local community involvement will not only occur through formal structures like the UNR Local Board but also through an annual public meeting where informal community participation will be encouraged.

Action Project 6.2.7 (i): Annually in March of each year arrange a public meeting to give feedback on progress, planned projects and encourage informal local community participation.

Informal communication between the general public / stakeholders and reserve management will be encouraged at all times within practical limits (Open door policy).

6.3 Security and Safety

EKZNW recognises that illegal activities within and around UNR will be a severe threat to the integrity of its natural and cultural heritage, its water storage and supply infrastructure, as well as the safety of UNR users, neighbouring communities and the attainment of its stated Mission and Management Objectives.

Nature Reserve management will therefore initiate and institutionalise a security strategy that ensures co-ordinated participation in all possible local or regional security forums and networks while optimising security in and around UNR. This strategy will ensure sufficient capacity to deal with conservation-related illegal activities in UNR (See also **Par. 6.4.7**) and contribute to a network of provincial, national and international law enforcement intelligence.

Action Project 6.3 (i): Develop an integrated security strategy for the Nature Reserve that ensures collaboration with all relevant institutions.

6.4 Natural Resource Management

6.4.1 Introduction

The management philosophy is one of adaptive management. This includes implementing management actions according to the stated objectives, policies and operational plans, monitoring progress and adapting the management strategy accordingly. This is done using a participatory, team approach and making use of the best scientific understanding in collaboration with partners and stakeholders. The principle of sustainable use of natural resources is implicit in the philosophy.

Management aims to conserve biodiversity through addressing threats and ensuring the maintenance and/or re-instatement of ecological processes that are considered the main determinants of ecosystem structure and function. Where these processes or regulatory mechanisms have been disrupted and cannot be re-instated, management will attempt to simulate their effects; otherwise Management intervention in the system will be minimised. In particular, the function of sustained water delivery of quality water is paramount.

Fire is a key ecological process influencing biodiversity in UNR. Given the above, the objective is to actively manage for a shifting mosaic of vegetation patches with high basal cover but different ages and sizes, thereby creating a diversity of habitats that will ensure the conservation of the biodiversity representative of the area. This approach will also provide the best insurance policy for the majority of organisms for which habitat requirements and response to fire are unknown. The mosaic is achieved is through controlling the spread of fire in the landscape and the conditions under which fires are ignited.

The other key interventions required to conserve biodiversity are the control of invasive species and man-induced soil erosion, as well as wildlife management and minimising illegal activities (e.g. illegal hunting and plant collecting).

6.4.2 Fire Management

Nature Reserve Management shall convene and chair a **Fire Workshop** in February each year. This workshop shall include Conservation Partnerships and Ecological Advice staff, and invited experts where appropriate.

At this Fire Workshop the burns of the previous fire season (planned and unplanned) will be reviewed and, based on the Nature Reserve. **Fire Management Plan**, management units will be scheduled for burns in the upcoming fire season and recorded as the **Annual Burning Plan** for implementation. In preparation for the Fire Workshop all fire returns will be with Ecological Advice by 30 November each year to allow for digital capture and analysis of the data.

The **Fire Management Plan** is to be based on the UNR management objectives and guided by 'best practice' linked to scientific understanding, legal context and risk management.

Action Project 6.4.2 (i): Develop a UNR **Fire Management Plan** that provides comprehensive fire management objectives, scientific understanding, management actions, legal compliance, personnel training requirements, monitoring and research required and resources needed.

Action Project 6.4.2 (ii): Develop a computerized decision support tool linked to GIS that will be included in the Fire Management Plan, to assist in the planning of burns at the annual Fire Workshop. This rule-based tool will ensure that UNR - wide and area-specific fire management objectives will be simultaneously achieved wherever possible, and will allow for flexibility in response to unplanned fires.

UNR is obligated in terms of the National Veld and Forest Fire Act to be a member of the local Fire Protection Association (FPA). In this regard Park Management will actively champion the establishment and maintenance of FPA's on and bordering UNR in order to gain the full legal advantages of being a member of the FPA and to promote, where possible, fire management regimes surrounding UNR that would benefit the conservation of biodiversity and ecological processes.

Action Project 6.4.2 (iii): Promote and champion (in cooperation with DWAF and the "Working on Fire" programme) the establishment of FPAs on the borders of UNR.

Action Project 6.4.2 (iv): Arrange a UNR Fire Management Workshop in February of each year.

6.4.3 Alien Species Control and Management

The requirements of NEMBA (Sections 76 and 77) in terms of **invasive species** and the relevant legal obligations of protected area management authorities will be noted. The following is the UNR strategy to deal with alien and alien invasive species in the Nature Reserve.

Action Project 6.4.3 (i): Compile and implement alien species control management plan.

6.4.3.1 Alien Plants

Alien plant species have been planted or have established themselves within UNR over time because they will, to varying degrees, impact negatively on water production, the natural environment and biodiversity as well as the natural landscape character of the Nature Reserve. Their control and management is considered a management priority.

Wherever possible and appropriate these plants will be removed from UNR.

The following management guidelines apply:

Alien Plant Introductions

Introductions of alien plants to UNR will not be tolerated except for non-invasive vegetables, garden plants, fruit trees, or herbs (for domestic consumption) planted within staff accommodation plots or non-invasive pot plants used indoors for decorative purposes, provided these plants in no way impact negatively on the ecological processes or disrupt normal animal behaviour patterns (e.g. fruit trees and baboons / monkeys).

Only plants indigenous to the UNR and surrounds will be used outdoors in landscaping projects within the demarcated development zones.

Declared Alien Weeds and Invasive Plants

Alien plants declared **weeds and invader plants** under section 29 of CARA (Act No. 43 1983) are a serious threat to the ecological functioning of natural systems as well as groundwater storage and water production from catchments. They will be controlled in terms of the relevant CARA regulations. An ongoing time-bound programme to effectively control these alien weeds and invader plants within the UNR and up to 1km beyond (buffer area) the Nature Reserve boundary will be developed in collaboration with neighbours and the relevant municipalities.

State poverty relief programs such as 'Landcare', 'Working for Water', 'Working on Fire' and 'Working for Wetlands' will be used to full effect to complement the Nature Reserve budget for this management task.

UNR management will be accountable for all invasive alien plant clearing and therefore will strictly supervise control operations to ensure that the correct methodologies are used and to avoid environmental damage.

Alien species are regarded as species or genotypes that are not indigenous to the Reserve, including hybrids and genetically altered organisms. Alien plants which have been declared weeds and invader plants (according to Section 29 of CARA) are a serious threat to the ecological functioning of natural systems.

The alien plant species of relevance within and immediately surrounding the Reserve include the following:

<i>Chromolaena odorata</i>	Paraffin/Triffid weed
<i>Lantana camara</i>	Lantana
<i>Solanum mauritianum</i>	Bugweed
<i>Litsea glutinosa</i>	Indian Laurel
<i>Rivina humilis</i>	Bloodberry

Project 6.4.3.1 (i): Undertake a full species survey for alien species present in UNR and map this distribution.

Project 6.4.3.1 (ii): Develop an ongoing time-bound programme to effectively control declared alien weeds and invader plants within UNR and 1 km beyond (buffer area) the Nature Reserve boundary.

Existing Non-invasive Alien Plants

A phased 3-year plan to address the existence and spread of non-invasive alien plants (including grasses) that already exist within UNR will be developed. Where required, this plan will also address the re-planting of relevant areas with indigenous plants. If considered appropriate by the PAMC, certain non-invasive alien plants may be demarcated and retained for horticultural or cultural-historical purposes. They will, however, not be replaced should they die, unless recommended by the PAMC for cultural-historical reasons. All seedlings of demarcated alien plants will be removed annually.

Project 6.4.3.1 (iii): Develop a phased 3-year plan to address the existing non-invasive alien plants in UNR.

6.4.3.2 Alien Animals

Because alien animal species will threaten the ecological, genetic or natural aesthetic integrity of the Nature Reserve and can be vectors for the spread of diseases, their control and management are considered a management priority. Wherever possible and appropriate these animals will be removed from UNR.

The following management guidelines apply:

Alien Animals Present in UNR

Alien animals that are present and are a threat / potential threat to the ecological processes / tourism experience in the Nature Reserve will be dealt with as necessary according to a control programme developed and approved by the PAMC.

No concessions have been made regarding alien animals however illegal cattle grazing occurs within the Nature Reserve. Dogs also enter the Nature Reserve to illegally hunt game.

A management strategy is needed to monitor and manage the impact of alien fish species in UNR.

Mallard ducks, alien wild ungulates, 'domesticated' guinea fowl and feral species are all potential threats and could be found in the Nature Reserve sporadically. They will be destroyed as soon as possible after their presence is detected (humanely as practically possible and with due regard for the tourist experience).

Action Project 6.4.3.2 (i): Develop a control programme for alien animals present in UNR.

Action Project 6.4.3.2 (ii): Develop a management strategy that will minimize the negative impact of alien fish and promote the establishment of sustainable populations of fish species indigenous to UNR.

Alien Animal Introductions

Introductions of alien animals to UNR are not accepted except:

- as part of culture-based, community-based or management projects approved by the PAMC; and
- in accordance with relevant EKZNW policies.
- It is critically important that these exceptions do not negatively influence the integrity and sustainability of Nature Reserve's biodiversity and ecological processes. A new, standardised and equitable UNR policy for keeping domestic animals and livestock is required and will also include procedures to deal in a consistent manner with alien animals that stray into UNR.

Action Project 6.4.3.2 (iii): Develop a new, equitable policy for keeping personal and official domestic animals in the Nature Reserve that includes procedures for dealing in a consistent manner with alien animals that stray into the Park. This policy will, *inter alia* clearly address:

- Threats to biodiversity conservation as a priority.
- Reducing the numbers of such animals to an absolute minimum.
- Designating areas where these animals will be kept. They will not be allowed to roam or feed in the Park (except for official patrol horses when on patrol) or interfere in any way with tourists.
- The proper and hygienic care of these animals.
- Minimum standards (aesthetic acceptability, sizes, neatness and cleanliness) of facilities housing these animals e.g. stables, camps, cages *etc.*
- Disciplinary measures for staff transgressing these regulations or failing to enforce these measures.

6.4.4 Wetland / River Management

In order to ensure a sustained flow of good quality water from this natural catchment it is essential that throughout the catchment (both in and outside UNR):

- A good vegetative canopy and basal cover is maintained to maintain a sustained flow of water and reduce turbidity caused by accelerated soil loss (See **Par. 6.4.2** and **6.4.5**).
- Strict pollution control and waste management standards will be applied, especially in the Nature Reserve (See **Par. 6.10**).
- Natural wetlands in the catchment are maintained and any damaged wetlands rehabilitated (chemical and sewerage).
- Invasive alien plants are removed and controlled (See **Par. 6.4.3**)
- Aquifer and surface water quality and quantity is monitored (See **Par. 6.9**)
- The river bank will be protected.

Action Project 6.4.4 (i): Develop a management plan to determine the state and health of the two wetlands with UNR.

Action Project 6.4.4 (ii): Obtain all standards for water quality from the Municipality or Department of Water Affairs (DWEA), review monitoring the results against these standards and take appropriate actions should any standard not be met by referring all concerns to the Department of Water Affairs.

Action Project 6.4.4 (iii): Undertake a full survey of upstream management and monitoring and the management of the estuary in UNR.

6.4.5 Soil Erosion Control

Gradual natural soil erosion processes will be allowed to continue unless this is a threat to the achievement of the Nature Reserve's management objectives. However, in the case of human-induced and / or aggravated erosion, appropriate remedial management action will be taken. Potential human impacts will be avoided through appropriate planning and maintenance of infrastructure especially trails/ pathways.

Human-induced soil erosion in UNR is primarily the result of the presence of invasive alien vegetation, poor alignment and management of foot paths and vehicle tracks and roads of the Nature Reserve. Old quarry sites / borrow pits and areas that have been cleared of invasive alien vegetation need rehabilitation plans primarily to prevent soil erosion.

Extensive sites of potential or aggravated soil erosion will be mapped, and the rehabilitation prioritised annually.

Rehabilitation of soil erosion sites will follow the guidelines presented by Coetzee (2005) and the EKZNW Track and Trail Maintenance Manual.

Action Project 6.4.5 (i): Map all extensive or potential human-induced / aggravated soil erosion sites and annually monitor the condition of these sites in order to prioritise rehabilitation work.

6.4.6 Wildlife Management

The primary objective of wildlife management at UNR will be to maintain, within the ecological carrying capacity of the Nature Reserve, viable indigenous wildlife populations that historically occurred in the area and are suited to the particular habitats offered by UNR.

Most wildlife populations presently existing in UNR are self-regulatory because of territorial behaviour, predator-prey relationships, food availability etc. The vegetation of UNR is not generally considered to be over-utilised by wildlife species.

Where possible, a minimal intervention management strategy will be followed in terms of indigenous wildlife management. Exceptions would be the specific strategies identified in terms of the National Norms and Standards for the management of specific species in accordance with NEMBA and / or this IMP and / or additional actions recommended by the PAMC. The latter interventions will only be considered for the following purposes:

- safeguarding populations of Rare and Endangered species;
- achieving UNR's Management Objectives and set Conservation Targets;
- complying with UNR's IMP Management Guidelines;
- the maintenance of populations of wildlife species to avoid the over-utilisation of the available natural resources;
- research and monitoring purposes;
- translocation to other state or private protected areas;

Wildlife that have been injured and are highly unlikely to survive will be destroyed on the authority of the UNR Manager. The Reserve Manager will, however ensure that all relevant information is

recorded and the relevant data / specimens / material provided is provide to the Ecological Advice component staff responsible for processing and recording such information. A copy of these records will be kept in the reserve office record system. The by-products such as meat and horns will be disposed of according to tariffs and procedures determined by EKZNW and in accordance with the relevant legislation.

6.4.6.1 Introductions of Indigenous Animal Species into UNR.

The introduction of indigenous animal species into the Nature Reserve will be considered in terms of **Corporate Policy D2.21** (See **Appendix 2**) and taking into account their natural distribution range, genetic compatibility, social behaviour characteristics, impacts on existing populations, habitat requirements, practical management and possible interaction with human communities adjacent to UNR.

The introduction of **any** animal species (individual or group) will be done in collaboration with the responsible Ecological Advice staff, with the approval of the PAMC. The introduction will be adequately documented. An animal species introduction policy for UNR is needed for the effective application of this policy guideline.

Action Project 6.4.6.1 (i): Develop a policy that addresses the introduction and population of animal wildlife species into the Nature Reserve.

6.4.6.2 Game Population Management

Ongoing game population management will be aimed at maintaining a diversity of species without negatively affecting vegetative diversity and cover. The objective of this management is to control numbers as far as possible within the ecological carrying capacity of the Nature Reserve. Ungulate game species populations that are not strongly territorial will be subject to a population management programme as their population numbers have the potential to increase to unsustainable numbers within the confines of UNR. This could result in overgrazing and trampling of the vegetation and eventually accelerated soil erosion and biodiversity losses. To guide game population management, it is therefore necessary to develop a UNR Game Management Policy Guideline document that is reviewed and recommended by the UNR PAMC.

The UNR PAMC will annually in February determine and recommend game removal or augmentation in terms of the Game Management Policy Guideline.

Game removal from UNR will only be undertaken by means of:

- live capture.

No culling is practised in the UNR.

Action Project 6.4.6.2 (i): Develop a UNR Game Introduction and Monitoring Programme with guidelines in terms of the EKZNW Wildlife Introduction Policy and Action Project: 6.4.6.1 (i) and implement.

6.4.6.3 Fishery Management

There is currently no biomonitoring of the fish populations. Law enforcement is maintained in terms of the legislation where valid fishing permits are required.

Action Project 6.4.6.3. (i): Bag limits and size of species is monitored as well as closed seasons on fishing. Regular monitoring and timeous patrols for illegal gill – netting will continue to be conducted.

6.4.6.4 Bird Management

UNR is an important bird site as there are 327 recorded bird species. Bird watching is a well known activity within UNR.

Action Project 6.4.6.4. (i): The Honorary Officer in charge of the “Birds in Reserve Programme” will continue to conduct water bird counts.

6.4.6.5 Problem Animal Management (Damage Causing Animals)

Animals that become a danger or excessive nuisance to persons and property due to either habituation or aberrant behaviour are to be destroyed humanely or captured and removed from UNR. This also applies to animals that escape or leave and return periodically and cause damage outside UNR.

To minimize the need to control problem animals, pro-active and preventative measures (e.g. fencing) would be considered as a priority, while affected public, visitors or neighbours need to be informed appropriately regarding the relevant animal behaviour and / or dangers. Where the only solution to the problem lies in destroying or capturing animals, the methods decided upon will be with due regard to avoiding possible public criticism.

All human / wildlife conflict matters relating to problem animal management (damage causing animals) will be dealt with in terms of the **NEMBA Norms and Standards for Management of Human and Wildlife Conflict in SA**. This is applicable to animals within and outside of the Nature Reserve.

Action Project 6.4.6.5 (i): The UNR Conservation Manager will ensure that all complaints and incidents reported are investigated by the relevant UNR staff and/or District Conservation Officer (DCO) as soon as possible. Complaint details, investigation findings and remedial action taken, is to be recorded in the prescribed Damage Causing Animals Complaints Register kept on station. Investigations and incident reporting is to be carried out in accordance with **EKZNW's DCO Control Protocol and Guidelines**.

6.4.7 Control over Illegal Use of Natural Resources

Illegal utilisation of UNR's natural resources is not quantified and is to be considered a threat that has the potential to increase significantly if not adequately controlled.

Ongoing vigilance through cost-effective surveillance, monitoring programmes and reaction capabilities. Direct illegal use of natural resources will be dealt with by UNR management while high risk criminal activities will be monitored and communicated to the relevant security forces as part of a broader co-operative security strategy.

A standing staff component of six field rangers, primarily tasked with law enforcement, has been appointed, is operative and will be maintained. Should illegal activities increase then it will be necessary for the staff component to be increased accordingly.

To assist in maintaining the Nature Reserve's ecological integrity and safeguarding staff and visitors, it is essential that the effectiveness of the field ranger component and their deployment is regularly and critically assessed. A well maintained statistical incident register will be used in such assessments.

Action Project 6.4.7 (i): Assessment of the field ranger component will be done monthly.

To resolve illegal utilisation of natural resources by neighbouring communities understanding and awareness through pro-active education amongst these communities is to be undertaken. (See **Local Community Involvement: Environmental Education**). Management will prosecute people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.

Action Project 6.4.7 (ii): Management will continue to prosecute people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.

6.5 Cultural Resource Management

Management of the cultural heritage is guided by the National Heritage Resources Act and as well as the Amafa / EKZNW Co-operative Conservation Management of Cultural Heritage Agreement (signed July 2005) and aims to promote the conservation and public appreciation of the cultural heritage found in UNR (See **Appendix 2, Policy B7**). The policy also provides guidelines in terms of monuments and memorials.

There is a critical need to develop a comprehensive cultural heritage management plan for UNR that would meet national requirements. This plan will cover archaeological, historical sites as well as palaeontological features and living heritage sites.

The cultural heritage of the UNR is non-renewable and importantly may shed further light on the socio-cultural history of the area. These resources are fragile and therefore the Cultural Heritage Management Plan will, in addition, address institutional specialist capacity to guide cultural heritage management on UNR.

Action Project 6.5 (i): Develop a comprehensive Cultural Heritage Inventory and Management Plan UNR in collaboration with Amafa. Institutional capacity will also be addressed by this plan.

6.6 Resource Utilisation

Requests for extractive use of plant, animal and abiotic resources will be considered provided that such resource use is sustainable, controlled and the natural or cultural heritage conservation management objectives of UNR are not compromised. Resource use will not be allowed to degrade the aesthetic landscape character of UNR or be permitted if management staff lack adequate capacity to ensure effective control over the resource utilisation or by compromising its essential functions.

Action Project 6.6 (i): Control or 'bench mark' areas within UNR will be identified where no extractive resource utilisation of indigenous species will take place.

6.6.1 Plants and Animals

Extractive resource use will be undertaken in accordance with **EKZNW Board Policy Nos. D2.15 and D3.12 to D3.19**.

The PAMC are to evaluate applications with due consideration of:

- any applicable land restitution or other agreements,
- the precautionary principle
- ecological and social acceptability,
- impact on the aesthetic character of the landscape,
- impact on eco-cultural tourism,
- sustainable and wise use of the resource,
- benefit to neighbouring communities,
- equitable access to the resource,
- any benefit transaction that is acceptable within the PFMA framework,
- harvesting operations that are effectively controlled and monitored,
- a written agreement stipulating resource price and /or conditions of harvest, and
- viable alternatives.

Action Project 6.6.1 (i): Evaluate Resource Use in UNR in terms of EKZNW policies for the Evaluation of Extractive Resource Use. If possible, sustainable and feasible in terms of this guideline, develop a resource use management plan and implement.

6.6.2 Bioprospecting

Requests to collect biological material / samples from UNR will be considered by the PAMC in accordance with, amongst others, **Policy D2.15 (Appendix 2)** from *bone fide* South African research institutions until national (NEMBA) and provincial legislation governing bioprospecting is in place.

Bioprospecting activities within the Nature Reserve will be closely monitored and regulated in terms of present environmental legislation.

6.6.3 Abiotic Resources

The extraction of abiotic resources from the protected area will not be permitted unless it has direct bearing on achievement of the UNR management objectives.

6.7 Eco-Cultural Tourism and Marketing

Eco-cultural tourism and marketing will be considered within the framework of, amongst others, **Board Policy E1 to E19** with regard to Commercial Operations (**Appendix 2**).

EKZNW has the mandate to sustainably develop UNR within the framework of its approved IMP and Concept Development Plan CDP. This will be undertaken to fully realise its eco-cultural tourism and associated income-generating potential, while respecting and giving access to the Nature Reserve's natural and cultural heritage features.

To fulfil this mandate, and in accordance with NEMPAA, EKZNW will initiate the compilation of a CDP. It will address future new development as well as the upgrading and maintenance of all existing infrastructure including tourist facilities (See **Par. 6.10 and 6.11**).

The CDP will be guided by the framework of the UNR Mission, Management Objectives, Zonation and Management Policy Guidelines as adopted and approved for this IMP. The approach adopted in the compilation of the CDP will involve an objective and integrated assessment of the Nature Reserve in terms of its natural and cultural heritage sensitivities, management and bulk infrastructure, its particular sense of place and its visitor infrastructure and facilities

EKZNW will strive to provide a quality eco-cultural tourism experience for visitors to the UNR. A range of appropriate facilities and services will be provided for the use of visitors to UNR. While some of these will serve recreational and social needs, emphasis will be placed on facilities and services that enrich the visitor's understanding and appreciation of the Nature Reserve.

In order for UNR to realise its full income-generating potential:

- The quality and standard of facilities will be maintained at a high level.
- Professional standard tourism service delivery will be provided.
- Its tourism opportunities will be competitively and effectively marketed.
- Cultural heritage tourism will require emphasis.
- A partnership strategy, that takes full advantage of appropriate opportunities for outsourcing (joint venture or otherwise) needs to be put in place while linkages will be sought with other regional tourism initiatives.
- A visitor orientation and interpretation strategy will be developed and implemented.

The above policies and values will be supported by a UNR Eco-cultural Tourism Development and Marketing Strategy that will be compiled and approved.

Action Project 6.7 (i): Cognisant of the UNR IMP and CDP policy guidelines, develop a UNR Eco-cultural Tourism Development and Marketing Strategy that addresses:

- the attainment of professional tourism service delivery standards
- branding and marketing
- linkages with other regional tourist initiatives
- public / private partnerships
- cultural heritage tourism
- visitor awareness, orientation and interpretation

Action Project 6.7 (ii): Develop and communicate formal procedures for local tourism user groups.

Action Project 6.7 (iii): Develop and implement a visitor management plan. Undertake analysis of available recreational facilities and identify opportunities to improve these.

Action Project 6.7 (iv): Align marketing strategy with EKZNW Organisational Plan and develop and communicate formal procedures for local tourism user groups.

6.8 Environmental Interpretation, Awareness and Education

Environmental interpretation, awareness and education of UNR's natural and cultural resources will be aimed at creating an awareness, understanding and appreciation of the value of these resources among the general public and visitors to the Nature Reserve.

An environmental awareness and education programme will be developed to pro-actively engage, inform and benefit the Nature Reserve's range of neighbouring communities and visitors. **Board Policies D 2.34** (Environmental Education) and **D 4.1** (Neighbour Relations) apply (See **Appendix 2**).

Programmes will not be primarily aimed at children, but provision will be made for developing various programmes, applicable to a wide spectrum of ages and education levels.

Programmes for groups and communities from other areas will be accommodated on request whenever possible. The "Kids and Parks" Programme requires school groups visiting the Nature Reserve's, to submit a lesson plan before the visit to qualify for a concession. The visit takes place during schooling days.

Where and whenever possible members of the local community (e.g. community tour guides) will be empowered and used to run appropriate environmental education tours.

Action Project 6.8 (i): Develop an environmental awareness education programme specifically for neighbouring communities and the general public interest groups.

Action Project 6.8 (ii): Compile educational material on environmental and cultural aspects of the Nature Reserve.

An interpretation programme using signage, displays and information media will be developed to effectively direct and inform visitors in respect of appropriate natural and cultural features of the area. The format of these signs will be standardised and trail marking will be a priority.

Action Project 6.8 (iii): Develop an interpretation programme in a standard format for the Nature Reserve.

An investigation to identify synergies in the needs of various government or other institutions in the area to develop awareness programmes (e.g. social education of the youth) will be undertaken and if feasible, to combine environmental awareness education with these other programmes. In this way, it will be possible to combine resources to reach a wider target audience.

Action Project 6.8 (vi): Investigate the possibility of combining environmental awareness programmes with social programmes offered by other institutions in the general area of the Nature Reserve.

Action Project 6.8 (v): Engage in biodiversity and cultural education with schools, communities, interest groups.

Action Project 6.8 (vi): Facilitate access to educational information pertaining to the history of the Nature Reserve and surrounding areas.

6.9 Research

Priority will be given to research that will provide information and understanding that is of direct benefit to UNR and will guide management interventions required to achieve the protected area's conservation targets as well as natural and cultural heritage management objectives in the most cost-effective manner. Opportunities will, however, be considered and provided for both applied *and* theoretical research of local, provincial or national importance.

Long term research and monitoring is desirable and necessary as a result of the dynamic and stochastic nature of the ecosystem and to ascertain whether management actions are having their desired affect in terms of achieving conservation targets as well as natural and cultural heritage management objectives.

Partnerships and agreements with appropriate academic and research institutions will be promoted to stimulate and encourage the desired research in UNR. In order to achieve this, the following will be undertaken:

- Management and scientific staff as well as external researchers will identify and priorities research requirements. This research priority list will then be circulated to tertiary research institutions and made available on the web site.
- All baseline abiotic and biotic data collected will be collated and stored in databases as well as GIS data layers to assist researchers in the planning of research projects and interpretation of data.
- Appropriate permanent research facilities will be developed within or bordering the Park in order to facilitate research work.

Action Project 6.9 (i): Develop a prioritised UNR natural and cultural heritage research project list.

Action Project 6.9 (ii): Develop procedures that will ensure that all abiotic and biotic data collected are captured in managed databases and GIS data layers for interrogation by researchers and managers.

Action Project 6.9 (iii): Investigate the potential in or near UNR for the development of permanent research facilities.

All proposals to undertake research within the Nature Reserve will be submitted and evaluated using the procedures outlined in the *Guidelines for the Registration and Administration of Research Projects Undertaken by or through Ezemvelo KZN Wildlife (August 2002)*. Where research requires the collection of biological material, a collection permit will be issued in accordance with approval of the research project.

A copy of all publications is to be lodged within the Nature Reserve, the Regional Office as well as the Head Office library and details captured using appropriate keywords into Coastal Region's bibliography.

A UNR bibliography and reference library facilities is to be developed together with procedures to maintain a hard and digital copy of all UNR related research work, all documents listed as IMP supporting documentation in **Appendix 1** as well as any new supporting management documentation produced. Libraries will be maintained at the Nature Reserve and at Regional Office. Strict curation rules shall apply and the ultimate responsibility for the curation of this library at UNR will be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice.

Action Project 6.9 (iv): Identify and develop reference library facilities and procedures to maintain hard and digital copies of all UNR related research work, all documents listed as IMP supporting documentation in **Appendix 2** as well as any new supporting management documentation produced. Strict curation rules shall apply and the ultimate responsibility for the curation of this library at UNR will be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice.

6.9.1 Monitoring and Evaluation

Baseline data collection, monitoring and evaluation will be undertaken in order to determine whether conservation targets, natural and cultural heritage management objectives, as well as, eco-cultural tourism objectives and targets are being achieved, and to ascertain the effectiveness of management interventions. Much of this information is required in order to meet the legal reporting requirements of the NEMBA and NEMPAA.

Due to (a) the stochastic (random behaviour) nature of the environment, (b) the effects of long-term climate cycles and change, and (c) the length of time for treatment effects to manifest themselves, it is necessary to implement long term baseline collection and monitoring programmes. It is also necessary to monitor and record all management interventions and the biophysical environment in order to understand the causes for any biological and environmental changes that may occur.

All existing monitoring programs are to be maintained. No programme is to cease and may only do so if submitted to BCOM unless there is a specific decision recorded in writing by the PAMC minutes to terminate a particular monitoring programme is recommended and is submitted to BCOM for approval.

The **Ecological Advice component** is responsible for:

- Designing all biodiversity monitoring and baseline collection programmes (including the data capture and storage procedures) and ensuring that these will provide data of the right precision and accuracy, and at the right frequency, in order to guide management decision making and to allow for reporting at the required frequency.
- Biodiversity data management, secure storage, analysis, reporting and regular feedback to management.
- Undertaking scientific monitoring and data collection.

The **Biodiversity Conservation Management component** is responsible for:

- The accurate collection of biodiversity baseline data, monitoring and data storage as agreed with the Ecological Advice component.
- Monitoring the use of natural areas by visitors through Limits of Acceptable Change criteria.
- Monitoring cultural sites as outlined in approved and implemented cultural heritage management plans in collaboration with Amafa/SAHRA as the case may be.
- Monitoring energy and water use by conservation management facilities.
- Monitoring development or land use change in the Nature Reserve and in its buffer zone for compliance with set environmental conditions linked to authorization.
- Monitoring compliance by outside parties with conditions as specified in agreements, contracts etc. in collaboration (where practical and as agreed) with the Ecotourism and Marketing component.

Ecotourism and Marketing (Commercial Operations) component is responsible for:

- Monitoring eco-cultural tourism statistics and revenue generation and reporting against revenue targets.
- Monitoring energy and water use by eco-cultural tourism and associated management facilities.
- Monitoring compliance by outside parties with conditions as specified in agreements, contracts etc. in collaboration (where practical and as agreed) with the Biodiversity Conservation Management component.

Action Project 6.9.1 (i): An appropriate monitoring and evaluation programme for each of the above components is to be developed for the Nature Reserve and implemented.

6.10 Infrastructure

EKZNW has the mandate to maintain, remove, expand or develop infrastructure within UNR natural and cultural heritage management as well as eco-cultural tourism purposes. However, development projects will only be undertaken if they are:

- Aligned with the Nature Reserve's Zonation and Management Guidelines.

- Listed as an approved Action Projects either in this IMP or in the Nature Reserve's Concept Development Plan (CDP).
- Recommended for implementation by the PAMC and approved by the EKZNW Board's Development Committee.
- Compliant with the relevant NEMA regulations and other applicable legal requirements, particularly regarding Environmental and Heritage Impact Assessments.

Infrastructure development outside UNR or on its periphery will always be considered as a preferred option, where practical, to reduce the amount of infrastructure and its resultant impacts on the environment within the Nature Reserve.

UNR management is responsible for infrastructure within the Nature Reserve and will at all times ensure that it is maintained in a safe, sound, clean, serviceable and aesthetically acceptable condition. Tourist accommodation, campgrounds and other facilities are at all times to be maintained to appropriate world-class standards regarding appearance, cleanliness and serviceability.

Utility service providers (e.g. Telkom, Eskom), concessionaires or other groupings that may, through agreements develop, use and /or maintain infrastructure within UNR, will be closely monitored by management to ensure that they abide by conditions contained in the relevant agreements and servitude conditions. Management will ensure that their activities do not negatively impact on the achievement of the natural and cultural heritage management objectives as well as landscape character of UNR and that they maintain the same values as expressed above.

All structures are to be (as far as possible) be harmonised with the surrounding environment and landscape character through appropriate siting, use of colour, building materials, landscaping and screening.

To create a sound foundation for future planning, all infrastructure will be listed on a maintained database and their positions plotted with GPS points on an associated UNR Infrastructure Map. Furthermore, the desirability and effectiveness of this infrastructure will be assessed with a view to reducing the impact of these structures on the UNR environment and landscape.

Action Project 6.10 (i): Review the desirability and effectiveness of all present infrastructure associated with Nature Reserve with regard to:

- Adequacy
- State of repair
- Existing maintenance plans and programs
- Visitor and staff use, requirements and values
- Financial
- Environmental impact (negative and positive)
- Income generation
- Possibilities of outsourcing

6.10.1 Entrance Points and Gates

All road entrance points to UNR will be under the control of management, certain functions may, however be outsourced. It is important that the entrance gates be secure at all times to discourage illegal entry to UNR.

There is one main gate entrance for the public which is used for access to the Nature Reserve.

6.10.2 Boundary Fence

The purpose of the boundary fence is to keep game in and live stock out of the reserve while demarcating reserve boundaries to assist in preventing illegal entry. There is six kilometers of boundary fence on the northern area of the Nature Reserve. The fence is generally 1.8m high.

Action Project 6.10.2 (i): Boundary fence needs to be assessed and erected where necessary.

6.10.3 Internal Fences

There are currently no internal fences within UNR except, for staff accommodation.

6.10.4 Signage

All access routes to the UNR are to be signposted.

Four groups of signage are identified, namely:

Public Entrance Gate and Boundary Signage

A standard for this signage is to be developed that clearly depicts that one is entering the UNR with any camp /office names in a secondary position.

Management Infrastructure Area Signage

Interpretation, directional and information signage in UNR will have a standardised format.

Trail Signage

The trail signage format highlights the name of the trail on a sign board.

Memorial Plaques

In terms of the Public Monuments and Memorials Policy and the Names of Protected Areas under the Control of EKZNW Policy, all applications for such memorials are to be made to the Board who would approve or not in terms of design and location. All such applications are subject to an EIA. The key legislation includes the KwaZulu – Natal Heritage Act, 1997 (Act No.10 of 1997) and the KwaZulu – Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997).

6.10.5 Roads, Tracks and Paths

Map 5 indicates the existing vehicle roads / tracks and footpaths used for public access, recreational use or management purposes.

Roads and tracks will be kept to a minimum to maintain the natural character of the landscape as far as possible and to avoid unnecessary negative impacts on the natural and cultural heritage of UNR. In terms of this management guideline, a critical evaluation of the existing road / track and footpath network needs to be undertaken to identify any that need to be closed or re-aligned. Any section that is approved for closure will be rehabilitated according to a documented rehabilitation programme.

Proposed development of new roads / tracks and footpaths or their closure will be aligned with the Zonation specified in this IMP and will follow the appropriate legal and other procedures after recommendation from the PAMC.

Management will ensure that the existing vehicle road / tracks and footpaths on UNR are effectively maintained to the appropriate standards in order to support the relevant use and avoid soil erosion as well as other negative impacts on the environment.

Roads and tracks that are heavily used by vehicles or sections prone to accelerated soil erosion will be tarred, paved, concreted or upgraded to 'all-weather' gravel roads that have been treated with a dust repellent (sealer).

Action Project 6.10.5 (i): All vehicle roads and tracks will be evaluated for the suitability of their alignment and recommendations made for new vehicle roads and tracks, repair or closure (with rehabilitation measures) of existing ones.

6.10.6 Staff Accommodation

Where essential for the efficient functioning of UNR, management will consider the provision and maintenance of staff accommodation, according to Corporate Norms and Standards. Accommodation is to meet standards as set by EKZNW's Technical Division and any development or maintenance in this regard will form part of the CDP.

Staff will be encouraged to acquire their own housing and live outside UNR, where practically possible and financially viable. In such cases, official transport to and from UNR may be considered depending on site specific circumstances and applicable corporate policies.

6.10.7 Offices, Workshops, Stables and other Infrastructure

UNR management will ensure that all infrastructure within the Nature Reserve is always maintained in a clean, neat and functional state and that these work areas meet Occupational Health and Safety Act standards.

All service areas (e.g. workshops, waste management and storage areas) will be effectively screened from public view using indigenous plantings.

Management will also be responsible for ensuring that any facility for keeping animals encamped or in captivity on UNR are legally compliant or maintained at generally accepted standards for keeping and caring for such animals.

6.10.8 Services

Management will strive to ensure that wherever possible, service infrastructure such as electricity, telephone, and water supply are located appropriately in the landscape or effectively screened to minimise their aesthetic and / or other environmental impacts. Reserve management will also strive to ensure that such infrastructure is maintained in a safe, serviceable and aesthetically acceptable condition by the relevant service providers.

6.10.9 Radio Communication and other Communication Equipment

UNR management uses a two-way radio system for efficient management. Any radio repeater stations or similar communication towers will comply with EIA conditions.

6.10.10 Waste Management

6.10.10.1 Domestic Solid Waste

All domestic waste is to be sorted for recycling. The recyclable waste is to be removed to authorised depots/ companies. The use of organic waste for compost purposes may be permitted but will be subject to strict conditional approval on the recommendation of the UNR PAMC. All historical waste disposal sites in UNR are to be rehabilitated.

Solid waste management procedures will be closely monitored by management to prevent pollution and other adverse impacts, especially of the water resources. All waste receptacles (for staff or the public) will be animal-proof (especially against baboons and monkeys) and maintained as such.

Action Project 6.10.10.1 (i): Develop an integrated waste management plan for UNR.

Action Project 6.10.10.1 (ii): Develop, install and maintain effective standardized solid waste receptacles for UNR that are animal and baboon / monkey-proof.

6.10.10.2 Sewage

All sewage systems are to be investigated and their compliance verified. New systems will be installed where there is non-compliance with legal requirements.

Existing infrastructure at UNR has four septic tank sewage systems which are overflowing into the wetland. Sewerage is pumped from the chalets to a central point and is then disposed of into the dunes. This creates an odour and is a potential health hazard. These systems will be replaced with more environmentally friendly systems.

Action Project 6.10.10.2 (i): All sewage systems in UNR to be investigated for legal compliance. A phased development plan to upgrade existing systems and septic tank / French drain systems will be put in place. This will be treated as a matter of urgency.

6.10.11 Water- and Energy-saving Measures

Water-and-Energy-Saving measures have been introduced to UNR by means of:

- Energy saving light bulbs.
- Installation of day and night switches.
- Installation of water meters outside offices and staff accommodation to monitor water usage and water leaks.
- Informal staff training on water and energy saving measures.

Action Project 6.10.11 (i): Develop a phased plan to install standardised (reliable and tested) water- and energy-saving devices throughout UNR.

6.10.12 Aircraft Landing Fields

No airstrips are permitted inside UNR except for helicopter landing pad maintained to the minimum aviation standards at selected site within the natural zone. These are primarily for emergency purposes or for such other purposes on the approval of PAMC after taking into account the effect on biodiversity and the environment, 'sense of place' values and tourist disturbance aspects.

Action Project 6.10.12 (i): Determine the requirement for helicopter landing pads on UNR. If required and approved, select site/s and maintain according to minimum aviation standards.

6.10.13 Staff and Visitor Safety

All requirements of the Occupational Health and Safety Act and other applicable legal requirements will be met to provide for the safety of staff and visitors in and around infrastructure installations at UNR (e.g. fire and electricity).

Action Project 6.10.13 (i): Management will maintain a secure entry controls system and maintain a high level of internal security in order that visitors and their belongings will be safe and secure.

Action Project 6.10.13 (ii): All Reserve staff will receive appropriate training regarding all health and safety aspect and will receive refresher course training as required on a regular basis.

6.11 Concept Development Plan

In compliance with NEMPAA and in order to initiate the development of new infrastructure as well as the strategic maintenance of existing infrastructure, EKZNW will initiate the compilation of a Conceptual Development Plan (CDP). The CDP will address the future development, improvement and maintenance of all infrastructure including eco-cultural tourism facilities.

The CDP will be guided by the framework of the UNR Mission, Management Objectives, Zonation and Management Policy Guidelines as adopted and approved for this IMP. The approach adopted in the compilation of the CDP will involve an objective and integrated assessment of the Nature Reserve in terms of its natural and cultural heritage sensitivities, management and bulk infrastructure, its particular sense of place and its visitor infrastructure and facilities.

6.11.1 Institutional Framework for Implementation of Development Projects contained in the CDP

The UNR management has the mandate to manage and sustainably develop the protected area to fully realise its ecotourism and associated income-generating potential, while respecting and giving access to the protected area's biodiversity and cultural values. Infrastructural planning and development of the protected area will be undertaken cognizant of the requirements the National Environmental Management Act (No. 107 of 1998) and the National Heritage Resources Act (No. 25 of 1999) and the KwaZulu-Natal Heritage Management Act (No. 10 of 1997).

The UNR CDP is guided by the framework of the UNR's Vision, Mission, Management Objectives, Zonation, Policy Framework and the Guiding Principles of this IMP. The approach adopted in the compilation of the CDP involves an objective and integrated assessment of the Reserve in terms of its natural and cultural heritage sensitivities, management and bulk infrastructure, its particular sense of place and its visitor infrastructure and facilities.

6.11.2 Strategic Considerations and Management Guidelines

The general strategic direction for the protected area set by the CDP is essentially one of consolidating and improving existing management and tourism infrastructure within the protected area while also seeking to improve links with local and regional conservation and tourism initiatives.

The emphasis in the CDP is on the improvement of the standard of existing infrastructure and improving the camp site as well as day visitor facilities throughout the protected area. Facilities for people with disabilities are to receive attention through specific policy formulation which will be applied to built infrastructure and related visitor amenities. It is envisaged that the implementation of this CDP will be instrumental in broadening access to the Reserve by a greater spectrum of the public and will provide a platform towards improving income generation, benefit flow management and inform any further appropriate development during the next five year planning period.

6.11.3 Alignment of CDP with Local Authority Integrated Development Plans

Emphasis has been placed on the importance of a cooperative governance relationship between UNR management and the Unthungulu District Municipality, to ensure that continuous development planning in and around the UNR is appropriately aligned as required by the National Environmental Management: Protected Areas Act and the Local Government: Municipal Systems Act.

It is critical from a biodiversity conservation, tourism and benefit flow perspective to preserve the aesthetic qualities of the natural landscape or "sense of place" which is strongly linked to retaining the natural character of the landscape both in and adjacent to the protected area.

Action Project 6.11.3 (i): Develop and maintain a UNR Infrastructure database and map.

Action Project 6.11.3 (ii): Review the desirability and effectiveness of all present infrastructure associated with UNR with regard to:

- Adequacy
- State of repair
- Existing maintenance plans and programs
- Visitor and staff use, requirements and values
- Financial
- Environmental impact (negative and positive)
- Income generation
- Possibilities of outsourcing

Action Project 6.11.3 (iii): Develop a Concept Development Plan and align with Municipal planning.

7 IMP REVIEW AND AMENDMENT PROCEDURES

7.1 Five-Yearly Review and Amendment Procedures

This UNR IMP will be reviewed every five years with the next review period planned for 2013 to revise and amend the IMP for the following five years, namely 2014 to 2018. If deemed appropriate by the PAMC, the review will take place sooner.

The EKZNW Management Planning Steering Committee, in collaboration with the Co-ordinator: Management Planning, will give guidance on the extent of public / stakeholder participation required before submitting the amended / updated IMP for approval to the Minister. The extent of the public / stakeholder participation (apart from that undertaken with the Local Board and the Joint Management Committee will depend on the nature and extent of amendments recommended by the relevant UNR PAMC.

Action Project 7.1 (i): The PAMC will undertake a five-yearly review of this IMP between September and November 2013 to revise and amend the IMP for the following five years.

7.2 Annual Review and Amendment Procedures

The PAMC will convene regularly to monitor and evaluate IMP progress, plan and, if necessary, recommend the re-prioritisation of management activities for the next year. The PAMC will, as record of these meetings, submit a report to the EKZNW Management Planning Co-ordination Unit which contains the following:

- Any recommended **minor amendments or corrections** to the IMP that do not affect the substance of the Mission, Management Objectives, Zonation, Management Policy Framework and Guiding Principles;
- The result of an annual evaluation by the PAMC of the Management Effectiveness Level achieved for UNR. This will be calculated using the World Bank Protected Area Management Effectiveness Evaluation Tool (Stolton *et al*, 2007);
- The cumulative number of Action Projects per Management Objective that have been completed, activated or not activated; as well as
- An indication of progress towards achieving Conservation Targets set in the IMP.

The PAMC will also be responsible for the recommendation of any policies, projects and plans that are developed as a result of the implementation of this IMP or other *ad hoc* projects etc. not covered by the IMP that have operational, financial and human resource or ecological implications (e.g. research projects that have not been identified according to IMP guidelines, or *ad hoc* funding received for the development of unplanned recreational facilities).

Any proposed significant amendments that are deemed necessary / urgent and that are likely to result in the amendment of the Mission, Management Objectives, Management Policy Framework and Guiding Principles contained in the UNR IMP will be supported by the PAMC, the Integrated Management Planning Steering Committee and BCOMM before being subjected to the appropriate public / stakeholder participation process and before BCOMM recommends that the proposed amended IMP is submitted for authorisation through the EKZNW Board to the MEC.

The EKZNW Management Planning Co-ordinator will ensure that any minor or significant IMP amendments that are appropriately approved, are duly noted / recorded and that a new digital 'master copy' (Word) version is generated and archived with the EKZNW Management Planning Co-ordination Unit as well as ensuring that updated 'read only' copies are distributed to the relevant Head Office sections and Regional General Manager who will ensure that the updated 'read only' digital and / or hard copies are distributed to all staff requiring these. The EKZNW Management Planning Co-ordinator will furthermore be responsible to ensure that website / intranet copies are updated at the same time.

Action Project 7.2 (i): Convene a PAMC meeting annually in November to monitor, evaluate and report on progress in terms of this IMP, plan and, if necessary, recommend the re-prioritisation of management activities or amendments to the IMP. Ensure all resource needs are submitted when budgets are being prepared.

8 PROJECTS FOR ACTION ACCORDING TO MANAGEMENT OBJECTIVES

While the tables below indicate the list of identified Action Projects that support the achievement of the specific objectives, it must be recognised that a number of other actions relating to ongoing protected area management, take place. Such actions would relate particularly to security, maintenance (buildings, roads, fences, veld management, etc) and relationships with stakeholders. It is important that they be detailed and included when developing budgets and business strategies.

8.1 List of IMP Action Projects

Table 2 below lists the Action Projects identified in the IMP. The number of the Action Project corresponds to the relevant sub-section or paragraph.

This is a comprehensive list of Action Projects identified as requiring attention for the management of the protected area. Management will identify, review and act on the identified priority Action Projects that will impact on the achievement of the protected area's objectives. These priorities will be regularly reviewed during this five year period.

It is important to note that these projects will not only interpreted in isolation but will be interpreted and operationalised within the relevant context and guidelines as stipulated in the IMP.

To ensure that the Umlalazi Nature Reserve attains its management objectives as set by the various stakeholders it is imperative that the various Action Projects be listed according to the relevant Management Objective (MO). To ensure sustainability it is imperative that these Action Projects be addressed in an integrated manner.

Table 2: List of IMP Action Projects

No.	IMP Action Project No.	Project Description
1.	2.1.1 (i)	Obtain written assignment from the MEC appointing EKZNW as the management authority for UNR in terms of Section 38(2) of NEMPAA.
2.	2.1.3 (ii)	Update and compile a list of all service providers in UNR.
3.	2.3 (i)	The Nature Reserve Manager in collaboration with other relevant EKZNW officials must be mandated with active participation in the review processes of the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) in order to ensure an effective buffer zone surrounding UNR through an alignment of appropriate land use adjacent to the Nature Reserve.
4.	2.3 (ii)	Establish and maintain relationship with Umlalazi Municipality to enable effective integration into planning.
5.	2.4 (i)	Obtain the services of a land surveyor to register the consolidated UNR with the Surveyor General and seek the proclamation of the area by the MEC.
6.	2.4 (ii)	The UNR Manager needs to be familiar with the leases and ensure that there is compliance with the conditions of the documents
7.	2.5 (i)	Obtain and review all formal and informal local agreements, leases, servitude arrangements <i>etc.</i> pertaining to UNR and document, update, maintain and monitor these appropriately authorised agreements. All informal agreements are to be formalised and submitted for approval by the Executive.
8.	2.5.1 (i)	Annually explore and investigate opportunities to broaden conservation land use in and around UNR.
9.	2.5.1 (ii)	Investigate and ensure that EKZNW has the first right to purchase the private owned land that lies within the UNR.

10.	3.4 (i)	Update the background of the Conservation History for UNR indicating the importance of the proclamations.
11.	3.5 (i)	Maintain the collection and storage of climatic data records. Include the Mean Annual Rainfall for UNR.
12.	3.6.3 (i)	Identify the biodiversity importance and implications of immature soil profiles for management.
13.	3.6.3 (ii)	Map the soils showing areas susceptible to erosion and develop appropriate mitigatory measures.
14.	3.7 (i)	Investigate the hydrology of the UNR, identify threats to its ecological functioning and propose mitigatory measures.
15.	3.8.1 (i)	Investigate the estuarine ecology and functioning within the UNR, and develop a management plan to mitigate against threats to its healthy functioning.
16.	3.8.2 (i)	There is the need to further investigate the Intertidal Ecology (in consultation with ORI and other relevant institutions) and develop a specific management plan for this zone.
17.	3.8.3 (i)	Investigate and include the coastal and marine environments (in consultation with ORI and other organisations) and develop specific management actions as appropriate.
18.	3.9 (i)	Develop a plant species list. This list will be filed with the Conservation Manager at UNR.
19.	3.9 (ii)	Compile and implement a vegetation management plan for UNR.
20.	3.9 (iii)	Compile and implement a vegetation management plan that addresses the threats to the priority flora.
21.	3.9 (iv)	Determine conservation targets for red data plants.
22.	3.9 (v)	Investigate the functioning of and propose a suitable management strategy for the mangrove swamp.
23.	3.10 (i)	Copies of the Species Checklists will be updated and filed manually and digitally at the UNR Management and Regional Offices as well as the Conservation Manager for easy reference. The copies will be updated in accordance with any authorised amendments. A fixed protocol for compiling and maintaining these checklists needs to be developed to ensure that they provide accurate, comparable and contemporary baseline data for management and scientific purposes.
24.	3.10 (ii)	Investigate priority marine fauna in consultation with ORI and other relevant institutions.
25.	3.10 (iii)	Compile a priority animal management plan.
26.	3.10.1 (i)	Compile, through research and collecting, a checklist of the invertebrate species found in UNR.
27.	3.10.2 (i)	Complete a fish survey for UNR.
28.	3.10.2 (ii)	Identify the major threats to priority fish in UNR and propose mitigatory measures.
29.	3.10.3 (i)	Compile, through further research and monitoring, check lists of the herpetofauna. Identify the major threats to Herpetofauna in UNR and propose mitigatory measures.
30.	3.10.3 (ii)	Develop and implement a Herpetofauna Species Monitoring Programme.
31.	3.10.4 (i)	Determine which of the listed bird species breed in the Nature Reserve, and ensure that management protocols are set in place to maintain and conserve these breeding sites for the long - term persistence of the species.
32.	3.10.4 (ii)	Identify the major threats to priority Avifauna in UNR and propose mitigatory measures.
33.	3.10.4 (iii)	Develop and implement an Avifauna Species Monitoring Programme
34.	3.10.5 (i)	Conduct a full inventory of mammals occurring in UNR.
35.	3.10.5 (ii)	Identify the major threats to priority Mammals in UNR and propose mitigatory measures.
36.	3.10.5 (iii)	Develop and implement a Mammals Species Monitoring

		Programme.
37.	3.11 (i)	Map the GPS Co-ordinates and provide Management Plans for these sites.
38.	3.11 (ii)	Identify the archaeological, historical, paleontological and cultural heritage sites at UNR. Ensure compliance with requirements of heritage legislation.
39.	3.12 (i)	Conduct research on the archaeology of the UNR.
40.	3.12 (ii)	Make use of archaeology and evidence of the past cultures inhabited the area in describing the cultural heritage value of UNR.
41.	3.13 (i)	Update the sociological context and its importance to UNR.
42.	3.14 (i)	Update the economic context and its importance for UNR.
43.	3.15 (i)	Identify and map infrastructure using GIS and include in a spatial database. Develop standard protocols and procedures for infrastructure in UNR.
44.	3.15 (ii)	Repair, where necessary, the existing infrastructure provided in the UNR.
45.	3.15.1 (i)	Undertake analysis of available recreational facilities. Repair and maintain recreational facilities as required.
46.	3.15.3 (i)	Establish flight paths for the helicopter for emergency purposes.
47.	3.15.5 (i)	Update UNR Map to include the location of all water supply infrastructure.
48.	3.15.6 (i)	Compile MoA between different service providers and UNR. The protected area manager needs to ensure that he is familiar with all agreements.
49.	4.2 (i)	Establish neighbour liaison forums.
50.	4.2 (ii)	Formalise relationships with municipal forums.
51.	4.2 (iii)	Implement EKZNW IEM policy and create awareness of/or inform surrounding landowners on the IEM Process and legislation.
52.	4.2 (iv)	Participate as a key stakeholder in EIA applications for developments near the reserve that may impact on the protected area.
53.	4.6 (i)	Set conservation targets and monitoring strategies for the identified species.
54.	4.6 (ii)	Develop conservation targets and monitoring strategies for Cultural, Business and Partnerships objectives.
55.	5 (i)	Revise the existing UNR zonation plan in accordance with the new EKZNW standard zonation system as soon as it is developed and approved.
56.	6.1.1 (i)	Develop a five-year Strategic Management Plan and Business Plan for UNR.
57.	6.1.1 (ii)	Initiate a resource economics study of the Nature Reserve to determine its economic value regarding the provision of ecosystem services and its contribution to the local and regional economy.
58.	6.1.2 (i)	Investigate and develop an appropriate human resource structure and capacity of UNR with a view to improving effectiveness and efficiency in achieving UNR objectives and informing the Business Plan.
59.	6.2 (i)	EKZNW will continue to work collaboratively with landowners and surrounding communities to improve conservation management of UNR for the benefit of all.
60.	6.2.1 (i)	Establish a Local Board for UNR.
61.	6.2.2 (i)	The Community Levy will continue to be collected for the development and upliftment of the local communities.
62.	6.2.3 (i)	Training of members of the local community will continued to be practiced. Investigate other employment opportunities that will benefit the surrounding local communities of UNR.
63.	6.2.5 (i)	Investigate and implement additional environmental education programmes for the communities surrounding UNR.

64.	6.2.7 (i)	Annually in March of each year arrange a public meeting to give feedback on progress, planned projects and encourage informal local community participation.
65.	6.3 (i)	Develop an integrated security strategy for the Nature Reserve that ensures collaboration with all relevant institutions.
66.	6.4.2 (i)	Develop a UNR fire Management Plan that provides comprehensive Fire management objectives, scientific understanding, management actions, legal compliance, personnel training requirements, monitoring and research required and resources needed.
67.	6.4.2 (ii)	Develop a computerized decision support tool linked to GIS that will be included in the Fire Management Plan, to assist in the planning of burns at the annual Fire Workshop. This rule-based tool must ensure that UNR - wide and area-specific fire management objectives can be simultaneously achieved wherever possible, and must allow for flexibility in response to unplanned fires.
68.	6.4.2 (iii)	Promote and champion (in cooperation with DWAF and the "Working on Fire" programme) the establishment of FPAs on the borders of UNR.
69.	6.4.2 (iv)	Arrange a UNR Fire Management Workshop in February of each year.
70.	6.4.3 (i)	Compile and implement alien species control management plan.
71.	6.4.3.1 (i)	Undertake a full species survey for alien species present in UNR.
72.	6.4.3.1 (ii)	Develop an ongoing time-bound programme to effectively control declared alien weeds and invader plants within UNR and 1 km beyond (buffer area) the Nature Reserve boundary.
73.	6.4.3.1 (iii)	Develop a phased 3-year plan to address the existing non-invasive alien plants in UNR.
74.	6.4.3.2 (i)	Develop a control programme for alien animals present in UNR.
75.	6.4.3.2 (ii)	Develop a management strategy that will minimize the negative impact of alien fish and promote the establishment of sustainable populations of fish species indigenous to the UNR.
76.	6.4.3.2 (iii)	<p>Develop a new, equitable policy for keeping personal and official domestic animals and livestock in the Nature Reserve that includes procedures for dealing in a consistent manner with alien animals that stray into the Park. This policy must, <i>inter alia</i> clearly address:</p> <ul style="list-style-type: none"> • Threats to biodiversity conservation as a priority. • Reducing the numbers of such animals to an absolute minimum. • Designating areas where these animals must be kept. They must not be allowed to roam or feed in the Park (except for official patrol horses when on patrol) or interfere in any way with tourists. • The proper and hygienic care of these animals. • Minimum standards (aesthetic acceptability, sizes, neatness and cleanliness) of facilities housing these animals e.g. stables, camps, cages etc. • Disciplinary measures for staff transgressing these regulations or failing to enforce these measures.
77.	6.4.4 (i)	Develop a management plan to determine the state and health of the two wetlands with UNR.
78.	6.4.4 (ii)	Obtain all standards for water quality from the Municipality or Department of Water Affairs (DWEA), review monitoring the results against these standards and take appropriate actions should any standard not be met by referring all concerns to the Department of Water Affairs.
79.	6.4.4 (iii)	Undertake a full survey of upstream management and monitoring and the management of the estuary in UNR.
80.	6.4.5 (i)	Map all extensive or potential human-induced / aggravated soil

		erosion sites and annually monitor the condition of these sites in order to prioritise rehabilitation work.
81.	6.4.6.1 (i)	Develop a policy that addresses the introduction of wildlife species into the Nature Reserve.
82.	6.4.6.2 (i)	Develop a UNR Game Introduction and Monitoring Programme with guidelines in terms of the EKZNW Wildlife Introduction Policy and Action Project: 6.4.6.1 (i) and implement.
83.	6.4.6.3 (i)	Bag limits and size of species is monitored as well as closed seasons on fishing. Regular monitoring and timeous patrols for illegal gill – netting will continue to be conducted.
84.	6.4.6.4 (i)	The Honorary Officer in charge of the “Birds in Reserve Programme” will continue to conduct water bird counts.
85.	6.4.6.5 (i)	The UNR Conservation Manager will ensure that all complaints and incidents reported are investigated by the relevant UNR staff and/or District Conservation Officer (DCO) as soon as possible. Complaint details, investigation findings and remedial action taken, is to be recorded in the prescribed Damage Causing Animals Complaints Register kept on station. Investigations and incident reporting is to be carried out in accordance with EKZNW's DCO Control Protocol and Guidelines .
86.	6.4.7 (i)	Assessment of the field ranger component will be done monthly.
87.	6.4.7 (ii)	Management will continue to prosecute people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.
88.	6.5 (i)	Develop a comprehensive Cultural Heritage Inventory and Management Plan UNR in collaboration with Amafa. Institutional capacity must also be addressed by this plan.
89.	6.6 (i)	Control or ‘bench mark’ areas within UNR will be identified where no extractive resource utilisation of indigenous species will take place.
90.	6.6.1 (i)	Evaluate Resource Use in UNR in terms of EKZNW policies for the Evaluation of Extractive Resource Use. If possible, sustainable and feasible in terms of this guideline, develop a resource use management plan and implement.
91.	6.7 (i)	Cognisant of the UNR IMP and CDP policy guidelines, develop a UNR. Eco-cultural Tourism Development and Marketing Strategy that addresses: <ul style="list-style-type: none"> • the attainment of professional tourism service delivery standards • branding and marketing • linkages with other regional tourist initiatives • public / private partnerships • cultural heritage tourism • visitor awareness, orientation and interpretation
92.	6.7 (ii)	Develop and communicate formal procedures for local tourism user groups.
93.	6.7 (iii)	Develop and implement a visitor management plan. Undertake analysis of available recreational facilities and identify opportunities to improve these.
94.	6.7 (iv)	Align marketing strategy with EKZNW Organisational Plan and develop and communicate formal procedures for local tourism user groups.
95.	6.8 (i)	Develop an environmental awareness education programme specifically for neighbouring communities and the general public interest groups.
96.	6.8 (ii)	Compile educational material on environmental and cultural aspects of the Nature Reserve.
97.	6.8 (iii)	Develop an interpretation programme in a standard format for the

		Nature Reserve.
98.	6.8 (iv)	Investigate the possibility of combining environmental awareness programmes with social programmes offered by other institutions in the general area of the Nature Reserve.
99.	6.8 (v)	Engage in biodiversity and cultural education with schools, communities, interest groups.
100.	6.8 (vi)	Facilitate access to educational information pertaining to the history of the Nature Reserve and surrounding areas.
101.	6.9 (i)	Develop a prioritised UNR natural and cultural heritage research project list.
102.	6.9 (ii)	Develop procedures that will ensure that all abiotic and biotic data collected are captured in managed databases and GIS data layers for interrogation by researchers and managers.
103.	6.9 (iii)	Investigate the potential in or near UNR for the development of permanent research facilities.
104.	6.9 (iv)	Identify and develop reference library facilities and procedures to maintain hard and digital copies of all UNR related research work, all documents listed as IMP supporting documentation in Appendix 1 as well as any new supporting management documentation produced. Strict curation rules shall apply and the ultimate responsibility for the curation of this library at UNR will be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice.
105.	6.9.1 (i)	An appropriate monitoring and evaluation programme for each of the above components is to be developed for the Nature Reserve and implemented.
106.	6.10 (i)	Review the desirability and effectiveness of all present infrastructure associated with the Nature Reserve with regard to: <ul style="list-style-type: none"> • Adequacy • State of repair • Existing maintenance plans and programs • Visitor and staff use, requirements and values • Financial • Environmental impact (negative and positive) • Income generation • Possibilities of outsourcing
107.	6.10.2 (i)	Boundary fences need to be assessed and erected where necessary.
108.	6.10.4 (i)	Develop the necessary policy and standards for each group of signage in UNR and implement a phased programme for replacing signage with the standardised formats – see also Action Project 6.8(ii).
109.	6.10.5 (i)	All vehicle roads and tracks must be evaluated for the suitability of their alignment and recommendations made for new vehicle roads and tracks, repair or closure (with rehabilitation measures) of existing ones.
110.	6.10.10.1 (i)	Develop an integrated waste management plan for UNR.
111.	6.10.10.1 (ii)	Develop, install and maintain effective standardized solid waste receptacles for UNR that are animal and baboon / monkey-proof.
112.	6.10.10.2 (i)	All sewage systems in UNR must be investigated for legal compliance. A phased development plan to upgrade existing systems and septic tank / French drain systems must be put in place. This must be treated as a matter of urgency.
113.	6.10.11 (i)	Develop a phased plan to install standardised (reliable and tested) water- and energy-saving devices throughout UNR.
114.	6.10.13 (i)	Management will maintain a secure entry controls system and maintain a high level of internal security in order that visitors and their belongings will be safe and secure.
115.	6.10.13 (ii)	All Reserve staff will receive appropriate training regarding all health and safety aspect and will receive refresher course training as required on a regular basis.

116.	6.10.12 (i)	Determine the requirement for helicopter landing pads on UNR. If required and approved, select site/s and maintain according to minimum aviation standards.
117.	6.11.3 (i)	Develop and maintain a UNR Infrastructure database and map.
118.	6.11.3 (ii)	Review the desirability and effectiveness of all present infrastructure associated with UNR with regard to: <ul style="list-style-type: none"> • Adequacy. • State of Repair. • Existing maintenance plans and programs. • Visitor and staff use, requirements and values. • Financial. • Environmental impact (negative and positive). • Income generation. • Possibilities of outsourcing.
119.	6.11.3 (iii)	Develop a Concept Development Plan and align with Municipal planning.
120.	7.1 (i)	The PAMC must undertake a five-yearly review of this IMP between September and November 2013 for the following five years.
121.	7.2 (i)	Convene a PAMC meeting annually in November to monitor, evaluate and report on progress in terms of this IMP, plan and, if necessary, recommend the re-prioritisation of management activities or amendments to the IMP. Ensure all resource needs are submitted when budgets are being prepared.

8.2 Alignment of IMP Action Projects with Prioritised Management Objectives

The 121 IMP Action Projects from **Table 2** have been aligned with the Management Objectives and are listed in **Table 3** below.

The IMP Action Projects in many cases are cross-cutting in achieving more than one objective. To aid prioritisation they have been placed (listed in number sequence) under the objective where they are likely to make the greatest contribution.

Table 3: IMP Action Projects aligned with and supporting the various UNR Management objectives.

Conservation	
Conservation of key biodiversity features, biophysical processes, landscapes, abiotic, historical and archaeological resources	
Conserve the Umlalazi Nature Reserve and its associated biodiversity	
3.4 (i)	Update the background of the Conservation History for UNR indicating the importance of the proclamations.
3.6.3 (i)	Identify the biodiversity importance and implications of immature soil profiles for management.
3.6.3 (ii)	Map the soils showing areas susceptible to erosion and develop appropriate mitigatory measures.
3.10.4 (i)	Determine which of the listed bird species breed in the Nature Reserve, and ensure that management protocols are set in place to maintain and conserve these breeding sites for the long - term persistence of the species.
3.15 (ii)	Repair, where necessary, the existing infrastructure provided in the UNR.
Contribute to the achievement of National and Provincial conservation targets.	
2.5.1 (i)	Annually explore and investigate opportunities to broaden conservation land use in and around UNR.
3.10 (ii)	Investigate priority marine fauna in consultation with ORI and other relevant institutions.
4.6 (i)	Set conservation targets and monitoring strategies for the identified species.
4.6 (ii)	Develop conservation targets and monitoring strategies for Cultural, Business and Partnerships Objectives.
Identify and control threats to biodiversity.	
3.10.3 (ii)	Identify the major threats to priority fish in UNR and propose mitigatory measures.
3.10.3 (i)	Compile, through further research and monitoring, check lists of the herpetofauna. Identify the major threats to Herpetofauna in UNR and propose mitigatory measures.
3.10.4 (ii)	Identify the major threats to priority Avifauna in UNR and propose mitigatory measures.
3.10.5 (ii)	Identify the major threats to priority Mammals in UNR and propose mitigatory measures.
Safeguard the archaeological, historical, palaeontological and living cultural heritage of the Nature Reserve.	
3.11 (ii)	Identify the archaeological, historical, paleontological and cultural heritage sites at UNR. Ensure compliance with requirements of heritage legislation.
3.12 (i)	Conduct research on the archaeology of the UNR.
3.12 (ii)	Make use of archaeology and evidence of the past cultures inhabited the area in describing the cultural heritage value of UNR.
Facilitate environmental and cultural education and awareness, including access to historical information related to the history of the reserve and the surrounding area.	
6.2.5 (i)	Investigate and implement additional environmental education programmes for the communities surrounding UNR.

6.8 (ii)	Compile educational material on environmental and cultural aspects of the Nature Reserve.
6.8 (iv)	Investigate the possibility of combining environmental awareness programmes with social programmes offered by other institutions in the general area of the Nature Reserve.
6.8 (v)	Engage in biodiversity and cultural education with schools, communities, interest groups.
6.8 (vi)	Facilitate access to educational information pertaining to the history of the Nature Reserve and surrounding areas.
Other Action Projects supporting UNR Conservation Management Objectives.	
2.1.1 (i)	Obtain written assignment from the MEC appointing EKZNW as the management authority for UNR in terms of Section 38(2) of NEMPAA.
2.4 (i)	Obtain the services of a land surveyor to register the consolidated UNR with the Surveyor General and seek the proclamation of the area by the MEC.
3.5 (i)	Maintain the collection and storage of climatic data records. Include the Mean Annual Rainfall for UNR.
3.7.1 (i)	Investigate the hydrology of the UNR, identify threats to its ecological functioning and propose mitigatory measures.
3.8.2 (i)	There is the need to further investigate the Intertidal Ecology in consultation with ORI and other relevant institutions.
3.8.3 (i)	Investigate and include the coastal and marine environments (in consultation with ORI and other organisations) and develop specific management actions as appropriate.
3.9 (i)	Develop a plant species list. This list will be filed with the Conservation Manager at UNR.
3.9 (ii)	Compile and implement a vegetation management plan for UNR.
3.9 (iii)	Compile and implement a vegetation management plan that addresses the threats.
3.10 (i)	Copies of the Species Checklists will be updated and filed manually and digitally at the UNR Management and Regional Offices as well as the Conservation Manager for easy reference. The copies will be updated in accordance with any authorised amendments. A fixed protocol for compiling and maintaining these checklists needs to be developed to ensure that they provide accurate, comparable and contemporary baseline data for management and scientific purposes.
3.10 (iii)	Compile a priority animal management plan.
3.10.1 (i)	Compile, through research and collecting, a checklist of the invertebrate species found in UNR.
3.10.2 (i)	Complete a fish survey for UNR.
3.10.3 (ii)	Develop and implement a Herpetofauna Species Monitoring Programme.
3.10.4 (iii)	Develop and implement an Avifauna Species Monitoring Programme
3.10.5 (i)	Conduct a full inventory of mammals occurring in UNR.
3.10.5 (iii)	Develop and implement a Mammals Species Monitoring Programme.
3.11 (i)	Map the GPS Co-ordinates and provide Management Plans for these sites.
3.15 (i)	Identify and map infrastructure using GIS and include in a spatial database. Develop standard protocols and procedures for infrastructure in UNR.
3.15.3 (i)	Establish flight paths for the helicopter for emergency purposes.
3.15.5 (i)	Update UNR Map to include the location of all water supply infrastructure.
3.15.6 (i)	Compile MoA between different service providers and UNR. The protected area manager needs to ensure that he is familiar with all agreements.
5 (i)	Revise the existing UNR zonation plan in accordance with the new EKZNW standard zonation system as soon as it is developed and approved.
6.2.1 (i)	Establish a Local Board for UNR.

6.4.2 (i)	Develop a UNR fire Management Plan that provides comprehensive Fire management objectives, scientific understanding, management actions, legal compliance, personnel training requirements, monitoring and research required and resources needed.
6.4.2 (ii)	Develop a computerized decision support tool linked to GIS that will be included in the Fire Management Plan, to assist in the planning of burns at the annual Fire Workshop. This rule-based tool must ensure that UNR - wide and area-specific fire management objectives can be simultaneously achieved wherever possible, and must allow for flexibility in response to unplanned fires.
6.4.2 (iii)	Promote and champion (in cooperation with DWAF and the “Working on Fire” programme) the establishment of FPAs on the borders of UNR.
6.4.2 (iv)	Arrange a UNR Fire Management Workshop in February of each year.
6.4.3 (i)	Compile and implement alien species control management plan.
6.4.3.1 (i)	Undertake a full species survey for alien species present in UNR.
6.4.3.1 (ii)	Develop an ongoing time-bound programme to effectively control declared alien weeds and invader plants within UNR and 1 km beyond (buffer area) the Nature Reserve boundary.
6.4.3.1 (iii)	Develop a phased 3-year plan to address the existing non-invasive alien plants in UNR.
6.4.3.2 (i)	Develop a control programme for alien animals present in UNR.
6.4.3.2 (ii)	Develop a management strategy that will minimize the negative impact of alien fish and promote the establishment of sustainable populations of fish species indigenous to the UNR.
6.4.3.2 (iii)	Develop a new, equitable policy for keeping personal and official domestic animals and livestock in the Nature Reserve that includes procedures for dealing in a consistent manner with alien animals that stray into the Park. This policy must, <i>inter alia</i> clearly address: <ul style="list-style-type: none"> • Threats to biodiversity conservation as a priority. • Reducing the numbers of such animals to an absolute minimum. • Designating areas where these animals must be kept. They must not be allowed to roam or feed in the Park (except for official patrol horses when on patrol) or interfere in any way with tourists. • The proper and hygienic care of these animals. • Minimum standards (aesthetic acceptability, sizes, neatness and cleanliness) of facilities housing these animals e.g. stables, camps, cages etc. • Disciplinary measures for staff transgressing these regulations or failing to enforce these measures.
6.4.4 (i)	Develop a management plan to determine the state and health of the two wetlands with UNR.
6.4.4 (ii)	Obtain all standards for water quality from the Municipality or Department of Water Affairs (DWEA), review monitoring the results against these standards and take appropriate actions should any standard be exceeded by referring all concerns to the Department of Water Affairs.
6.4.4 (iii)	Undertake a full survey of upstream management and monitoring and the management of the estuary in UNR.
6.4.5 (i)	Map all extensive or potential human-induced / aggravated soil erosion sites and annually monitor the condition of these sites in order to prioritise rehabilitation work.
6.4.6.1 (i)	Develop a policy that addresses the introduction of wildlife species into the Nature Reserve.
6.4.6.2 (i)	Develop a UNR Game Introduction and Monitoring Programme with guidelines in terms of the UNR Wildlife Introduction Policy and Action Project: 6.4.6.1 (i) and implement.
6.4.6.3 (i)	Bag limits and size of species is monitored as well as closed seasons on fishing. Regular monitoring and timeous patrols for illegal gill – netting will continue to be conducted.
6.4.6.4 (i)	The Honorary Officer in charge of the “Birds in Reserve Programme” will continue to conduct water bird counts.

6.4.6.5 (i)	The UNR Conservation Manager will ensure that all complaints and incidents reported are investigated by the relevant UNR staff and/or District Conservation Officer (DCO) as soon as possible. Complaint details, investigation findings and remedial action taken, is to be recorded in the prescribed Damage Causing Animals Complaints Register kept on station. Investigations and incident reporting is to be carried out in accordance with EKZNW's DCO Control Protocol and Guidelines .
6.4.7 (i)	Assessment of the field ranger component will be done monthly.
6.4.7 (ii)	Management will continue to prosecute people that illegally utilise natural resources for commercial or other purposes in accordance with the legislation.
6.5 (i)	Develop a comprehensive Cultural Heritage Inventory and Management Plan UNR in collaboration with Amafa. Institutional capacity must also be addressed by this plan.
6.6 (i)	Control or 'bench mark' areas within UNR will be identified where no extractive resource utilisation of indigenous species will take place.
6.6.1 (i)	Evaluate Resource Use in UNR in terms of EKZNW policies for the Evaluation of Extractive Resource Use. If possible, sustainable and feasible in terms of this guideline, develop a resource use management plan and implement.
6.8 (iii)	Develop an interpretation programme in a standard format for the Nature Reserve.
6.9 (ii)	Develop procedures that will ensure that all abiotic and biotic data collected are captured in managed databases and GIS data layers for interrogation by researchers and managers.
6.9 (iii)	Investigate the potential in or near UNR for the development of permanent research facilities.
6.9 (iv)	Identify and develop reference library facilities and procedures to maintain hard and digital copies of all UNR related research work, all documents listed as IMP supporting documentation in Appendix 1 as well as any new supporting management documentation produced. Strict curation rules shall apply and the ultimate responsibility for the curation of this library at UNR will be allocated to the most senior reserve management position and the Regional Co-ordinator: Ecological Advice.
6.9.1 (i)	An appropriate monitoring and evaluation programme for each of the above components is to be developed for the Nature Reserve and implemented.
6.11.3 (i)	Develop and maintain a UNR Infrastructure database and map.
6.11.3 (ii)	Review the desirability and effectiveness of all present infrastructure associated with UNR with regard to: <ul style="list-style-type: none"> • Adequacy. • State of Repair. • Existing maintenance plans and programs. • Visitor and staff use, requirements and values. • Financial. • Environmental impact (negative and positive). • Income generation. • Possibilities of outsourcing.
6.10.2 (i)	Boundary fences need to be assessed and erected where necessary.
6.10.4 (i)	Develop the necessary policy and standards for each group of signage in UNR and implement a phased programme for replacing signage with the standardised formats – see also Action Project 6.8(ii).
6.10.5 (i)	All vehicle roads and tracks must be evaluated for the suitability of their alignment and recommendations made for new vehicle roads and tracks, repair or closure (with rehabilitation measures) of existing ones.
6.10.10.1 (i)	Develop an integrated waste management plan for UNR.
6.10.10.1 (ii)	Develop, install and maintain effective standardized solid waste receptacles for UNR that are animal and baboon / monkey-proof.
6.10.10.2 (i)	All sewage systems in UNR must be investigated for legal compliance. A phased development plan to upgrade existing systems and septic tank / French drain systems must be put in place. This must be treated as a matter of urgency.
6.10.11 (i)	Develop a phased plan to install standardised (reliable and tested) water- and energy-saving devices throughout UNR.
6.10.12 (i)	Determine the requirement for helicopter landing pads on UNR. If required and approved, select site/s and maintain according to minimum aviation standards.
6.10.13 (i)	Management will maintain a secure entry controls system and maintain a high level of

	internal security in order that visitors and their belongings will be safe and secure.
6.10.13 (ii)	All Reserve staff will receive appropriate training regarding all health and safety aspect and will receive refresher course training as required on a regular basis.
7.1 (i)	The PAMC must undertake a five-yearly review of this IMP between September and November 2013 for the following five years.
7.2 (i)	Convene a PAMC meeting annually in November to monitor, evaluate and report on progress in terms of this IMP, plan and, if necessary, recommend the re-prioritisation of management activities or amendments to the IMP. Ensure all resource needs are submitted when budgets are being prepared.
Socio-Economic Benefits The provision of socio-economic benefits (benefit flow) to the Reserve's neighbours and to contribute to the local economy and the efforts of conservation in a sustainable manner based on sound business principles (EKZN Business Plan)	
Provide appropriate recreational opportunities.	
3.15.1 (i)	Undertake analysis of available recreational facilities. Repair and maintain recreational facilities as required.
Other Action Projects supporting UNR Socio-economic Management Objective.	
2.4 (ii)	The UNR Manager needs to be familiar with the leases and ensure that there is compliance with the conditions of the documents
3.13 (i)	Update the sociological context and its importance to UNR.
3.14 (i)	Update the economic context and its importance for UNR.
6.1.1 (i)	Develop a five-year Strategic Management Plan and Business Plan for UNR.
6.1.1 (ii)	Initiate a resource economics study of the Nature Reserve to determine its economic value regarding the provision of ecosystem services and its contribution to the local and regional economy.
6.2.2 (i)	The Community Levy will continue to be collected for the development and upliftment of the local communities.
6.2.7 (i)	Annually in March of each year arrange a public meeting to give feedback on progress, planned projects and encourage informal local community participation.
6.9 (i)	Develop a prioritised UNR natural and cultural heritage research project list.
Business The provision of appropriate ecotourism business opportunities in the natural and cultural environment based within the influence sphere of UNR	
Other Action Projects supporting UNR Management Business Objective.	
2.5 (i)	Obtain and review all formal and informal local agreements, leases, servitude arrangements etc. pertaining to UNR and document, update, maintain and monitor these appropriately authorised agreements. All informal agreements are to be formalised and submitted for approval by the Executive.
2.5.1 (ii)	Investigate and ensure that EKZNW has the first right to purchase the private owned land that lies within the UNR.
6.1.2 (i)	Investigate and develop an appropriate human resource structure and capacity of UNR with a view to improving effectiveness and efficiency in achieving UNR objectives and informing the Business Plan.
6.11.3 (iii)	Develop a Concept Development Plan and align with Municipal planning.
Partnerships The formation of functional partnerships to integrate the UNR with regional development plans and other initiatives which underwrite the vision of UNR	
Promote and ensure effective communication between the local communities and EKZNW through integrated, shared and co-operative working relationships.	
6.2.3 (i)	Training of members of the local community will continued to be practiced. Investigate other employment opportunities that will benefit the surrounding local communities of UNR.

6.8 (i)	Develop an environmental awareness education programme specifically for neighbouring communities and the general public interest groups.
Participate as a key stakeholder in local environmental management initiatives.	
4.2 (iv)	Participate as a key stakeholder in EIA applications for developments near the reserve that may impact on the protected area.
Other Action Projects supporting UNR Management Partnerships Objective.	
2.1.3 (i)	Draft a servitude agreement for the access to the salt water pipeline to the Prawn farm. Ensure that management is familiar with the servitude agreement and its restrictions.
2.1.3 (ii)	Update and compile a list of all service providers in UNR.
2.3 (i)	The Nature Reserve Manager in collaboration with other relevant EKZNW officials must be mandated with active participation in the review processes of the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) in order to ensure an effective buffer zone surrounding UNR through an alignment of appropriate land use adjacent to the Nature Reserve.
2.3 (ii)	Establish and maintain relationship with Umlalazi Municipality to enable effective integration into planning.
4.2 (i)	Establish neighbour liaison forums.
4.2 (ii)	Formalise relationships with municipal forums.
4.2 (iii)	Implement EKZNW IEM policy and create awareness of/inform surrounding landowners on the IEM Process and legislation.
6.2 (i)	EKZNW will continue to work collaboratively with landowners and surrounding communities to improve conservation management of UNR for the benefit of all.
6.7 (i)	Cognisant of the UNR IMP and CDP policy guidelines, develop a UNR. Eco-cultural Tourism Development and Marketing Strategy that addresses: <ul style="list-style-type: none"> • the attainment of professional tourism service delivery standards • branding and marketing • linkages with other regional tourist initiatives • public / private partnerships • cultural heritage tourism • visitor awareness, orientation and interpretation
6.7 (ii)	Develop and communicate formal procedures for local tourism user groups.
6.7 (iii)	Develop and implement a visitor management plan. Undertake analysis of available recreational facilities and identify opportunities to improve these.
6.10 (i)	Review the desirability and effectiveness of all present infrastructure associated with the Nature Reserve with regard to: <ul style="list-style-type: none"> • Adequacy • State of repair • Existing maintenance plans and programs • Visitor and staff use, requirements and values • Financial • Environmental impact (negative and positive) • Income generation • Possibilities of outsourcing

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APPENDIX 1

List of References for Unpublished Supporting Documentation **UNR - Integrated Management Plan** **2009 - 2013**

Copies available from:

Coastal Regional Office of Ezemvelo KZN Wildlife, Durban.
Contact person: Ecological Advice Coordinator, Coastal Region

Item

1. EKZNW Corporate Strategic Plan and Performance Plan for 2009-2014.
2. EKZNW Corporate Policies (Norms & Standards) listed below.
3. EKZNW Biodiversity Database Checklists for UNR. (List obtained from Conservation Manager)
4. Amafa / EKZNW Co-operative Conservation Management of Cultural Heritage Agreement (signed July 2005).
5. List of local agreements, leases and other servitude arrangements pertaining to UNR.
6. Guidelines for the Registration and Administration of Research Projects Undertaken by or through Ezemvelo KZN Wildlife (August 2002)
7. Management Plan (Umlalazi Nature Reserve), 1st Edition, June 1993.
8. Public Participation Report for the Umlalazi Nature Reserve IMP.

APPENDIX 2

Appendix 2 below lists the EKZNW Corporate Policies (Norms & Standards) referenced from intranet⁴ that are most relevant to EKZNW PA management. It is, however, the responsibility of all management and other personnel associated with the management of protected areas to ensure that they familiarise themselves and comply with the most recent versions of *all* EKZNW Board Approved Policies.

<u>EKZNW CORPORATE POLICIES (NORMS & STANDARDS)</u>	
<u>Policy File No.</u>	CORPORATE AFFAIRS
B 2	• Access to Ezemvelo KZN Wildlife Areas and Employment.
B 5	• Outsourcing of Functions and Services
B 7	• Monuments, Memorials and Names of Protected Areas under the control of EKZNW.
B 8	• Restricted use of Board Theatres, Halls and Conference Facilities etc.
B 9	• Code of Ethics / Conduct.
B 10	• Photography in Board Protected Areas.
B 13	• Mission Statement
B 14	• Access to Information.
<u>Policy File No.</u>	INTERNAL AUDIT
C 5	• Management Control
BIODIVERSITY CONSERVATION OPERATIONS	
1. NATURAL RESOURCE SUSTAINABILITY	
<u>Policy File No.</u>	Threatened Species and Ecosystems
D 1.1	• Disposal of Black Rhino.
D 1.2	• Disposal of Surplus White Rhino.
D 1.3	• Strategy for the Management of Southern White Rhino in KwaZulu-Natal.
D 1.4	• Strategy for the Biological Management of Black Rhino in KwaZulu-Natal.
D 1.5	• Rhinoceros Products.
D 1.6	• Crocodilians
D 1.7	• Cycads.
D 1.8	• Disposal of Threatened Species.
<u>Policy File No.</u>	Exotic and Invasive Species
D 1.9	• Release of Alien Species.
D 1.10	• Control Measures for Red-billed Quelea.
D 1.12	• Grass Carp.
D 1.13	• Establishment of Alien Plantations.
<u>Policy File No.</u>	Migratory Species
D 1.14	• Black Wildebeest and Blue Wildebeest Hybridization and Conservation.
D 1.15	• Permit authorizing the collection of Biological Material within Board Areas.

⁴ www.kznwildlife.com/intranet (Accessed 31 March 2009)

	2. CONSERVATION EFFECTIVENESS
<u>Policy File No.</u>	Strategic Applications
D 2.1	<ul style="list-style-type: none"> • Involvement of the KwaZulu-Natal Nature Conservation Board in Project 8 of the MAB (Man and Biosphere) Programme.
<u>Policy File No.</u>	Conservation Management: Protected Area Management
D 2.2	<ul style="list-style-type: none"> • Management of Wilderness Areas.
D 2.3	<ul style="list-style-type: none"> • Protected Area Development.
D 2.4	<ul style="list-style-type: none"> • Prohibition of Works and Servitudes in Board Areas.
D 2.5	<ul style="list-style-type: none"> • Zonation and Regulations for the control of off-road vehicles on beaches controlled by the Board.
D 2.6	<ul style="list-style-type: none"> • Quarries in KZN Protected Areas.
D 2.7	<ul style="list-style-type: none"> • Re-establishment and Management of Vegetation on Development Sites in the Ezemvelo KZN Wildlife Protected Areas.
D 2.8	<ul style="list-style-type: none"> • Ecotourism and Protected Areas.
D 2.9	<ul style="list-style-type: none"> • Solid Waste Management within Protected Areas.
D 2.10	<ul style="list-style-type: none"> • State Security Service Activities within Board Areas.
D 2.11	<ul style="list-style-type: none"> • Shark Nets in or bordering KwaZulu-Natal Nature Conservation Board Controlled Areas.
<u>Policy File No.</u>	Integrated Environmental Management
D 2.12	<ul style="list-style-type: none"> • Integrated Environmental Management - incorporating the procedure for the assessment of the impact of proposed development projects on nature conservation concerns.
D 2.13	<ul style="list-style-type: none"> • Precautionary Principle.
D 2.14	<ul style="list-style-type: none"> • Shark Net Installations.
D 2.15	<ul style="list-style-type: none"> • Bioprospecting in KwaZulu-Natal.
D 2.17	<ul style="list-style-type: none"> • Use of Pesticides by the Ezemvelo KZN Wildlife: Safety to Humans and the Environment.
D 2.18	<ul style="list-style-type: none"> • Interference with the Mouth of a Lagoon or River (Breaching).
<u>Policy File No.</u>	Ex Situ Wild Animal Management
D 2.21	<ul style="list-style-type: none"> • Re-establishment of Terrestrial Mammals in Board Areas.
D 2.22	<ul style="list-style-type: none"> • Translocation of Animals.
D 2.25	<ul style="list-style-type: none"> • Elephant Introductions and Elephant in Enclosures.
D 2.27	<ul style="list-style-type: none"> • Introduction and Keeping of Large Predators in Enclosures in KZN.
D 2.28	<ul style="list-style-type: none"> • Use of Narcotic Drugs.
D 2.29	<ul style="list-style-type: none"> • Falconry.
<u>Policy File No.</u>	Human Animal Conflict - Inside and Outside Protected Areas
D 2.30	<ul style="list-style-type: none"> • Disposal of Leopard from Ezemvelo KZN Wildlife Protected Areas.
D 2.31	<ul style="list-style-type: none"> • Problem Animal Control.
D 2.32	<ul style="list-style-type: none"> • Compensation claims in respect of damage caused by Lion, Cheetah, Wild Dog and Elephant to Stock and Crops.
D 2.33	<ul style="list-style-type: none"> • Instances of Death as a result of an Unprovoked Attack by a Wild Animal Normally contained and originating from within a Fenced Protected Area under the Control of the KwaZulu-Natal Nature Conservation Board.

<u>Policy File No.</u>	Environmental Awareness
D 2.34	<ul style="list-style-type: none"> Environmental Education Policy.
	3. BIODIVERSITY PROTECTION
<u>Policy File No.</u>	Co-management
D 3.1	<ul style="list-style-type: none"> Supply of Game to Conservancies, Community Conservation Areas and Biosphere Reserves in KwaZulu-Natal
D 3.2	<ul style="list-style-type: none"> Establishment and Management of Community Conservation Reserves (CCR)
D 3.4	<ul style="list-style-type: none"> Community Conservation Programmes
D 3.5	<ul style="list-style-type: none"> Neighbours' Access to Board Protected Areas
D 3.6	<ul style="list-style-type: none"> Relationship with Local Boards
D 3.7	<ul style="list-style-type: none"> Conservation Partnerships Between KwaZulu-Natal Nature Conservation Board and Adjacent Landowners
D 3.8	<ul style="list-style-type: none"> Community Trust
D 3.9	<ul style="list-style-type: none"> Community Levy Policy and Guidelines
D 3.10	<ul style="list-style-type: none"> Land Claims on Proclaimed and Unproclaimed Provincial and Assigned National Protected areas in KwaZulu-Natal
D 3.11	<ul style="list-style-type: none"> Amafa Policy Guidelines for the access of rock art sites in KwaZulu Natal
<u>Policy File No.</u>	Resource-use benefits
D 3.12	<ul style="list-style-type: none"> Disposal of Venison from Ezemvelo KZN Wildlife Management Operations.
D 3.13	<ul style="list-style-type: none"> Sustainable use of wildlife resources.
D 3.14	<ul style="list-style-type: none"> Freshwater Angling.
D 3.15	<ul style="list-style-type: none"> Freshwater species utilisation.
D 3.16	<ul style="list-style-type: none"> Use of plant resources from protected areas.
D 3.17	<ul style="list-style-type: none"> Use of doomed biological material.
D 3.19	<ul style="list-style-type: none"> Provision of hunting by Ezemvelo KZN Wildlife.
<u>Policy File No.</u>	4. RELATIONSHIPS
D 4.1	<ul style="list-style-type: none"> Neighbour Relations.
D 4.2	<ul style="list-style-type: none"> Participation - Non Government Organisations.
D 4.3	<ul style="list-style-type: none"> Data Access.
D 4.4	<ul style="list-style-type: none"> <u>Consultation and Communication with Stakeholders: Policy and Guidelines.</u>
<u>Policy File No.</u>	COMMERCIAL OPERATIONS
E 1	<ul style="list-style-type: none"> Concessions for Welfare Groups.
E 2	<ul style="list-style-type: none"> Hiking and Mountaineering.
E 3	<ul style="list-style-type: none"> Educational Concessions.
E 4	<ul style="list-style-type: none"> Club Facilities within Board Areas.
E 5	<ul style="list-style-type: none"> Hutted Camps.
E 6	<ul style="list-style-type: none"> Joint Venture Scheme.
E 7	<ul style="list-style-type: none"> Allocation of Sites in terms of the Joint Venture Scheme.
E 8	<ul style="list-style-type: none"> Access to Protected Areas through Unofficial Entry Points.
E 9	<ul style="list-style-type: none"> Visitor Facilities Management by Ezemvelo KZN Wildlife.
E 10	<ul style="list-style-type: none"> Lease of Lakeshore at State Dam Protected Areas.
E 11	<ul style="list-style-type: none"> Execution, Control and Management of Leases and Concession Contracts (excluding Biodiversity Conservation Partnerships and Leases of Wildlife).
E 12	<ul style="list-style-type: none"> Private Sector Reservations Policy.

E 13	• Partnerships for Eco-Tourism Development within or Adjacent to Protected Areas.
E 14	• Discounting of Tariffs for Walk-in Guests.
E 15	• Ecotourism Discounting Strategy.
E 16	• Travel Trade Commissions: Tour Operator/ Travel Agency.
E 17	• Policy and Procedure for the establishment and monitoring of Commercial Operations Public Private Partnership (PPP) Agreements.
E 18	• Administrative and operational policy on Professional hunting in South Africa.
E 19	• Commercialisation.

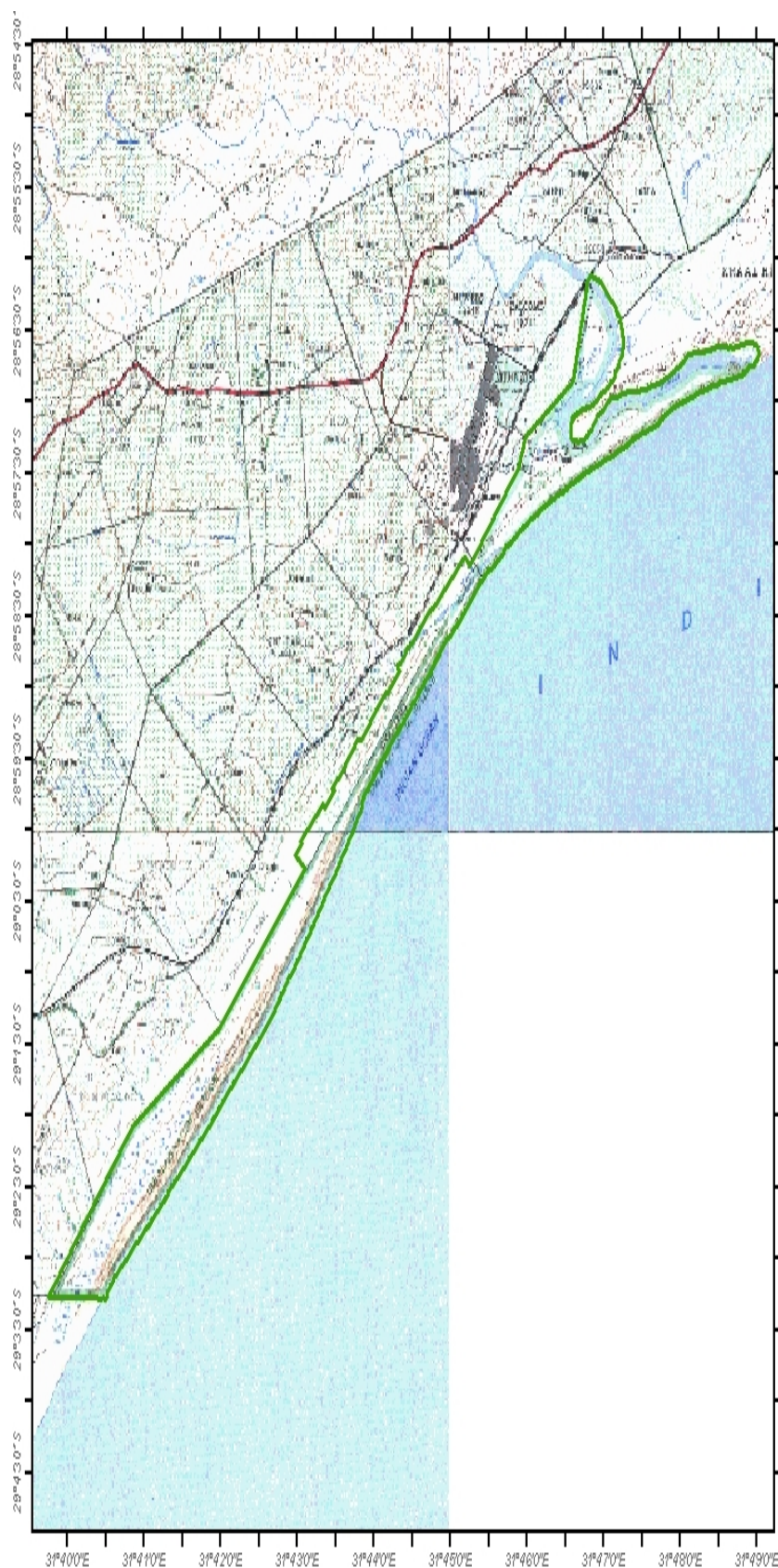
APPENDIX 3: ZONATION DESCRIPTIONS

CATEGORY	DESCRIPTION OF CRITERIA TO BE USED FOR ZONATION	SETTING DESCRIPTIONS (AS FROM ROS HANDBOOK)
Semi-Primitive Non-motorised	<p>Closely related to the above zone, but usage of formalized trails at a high intensity – concreting/rock-packing of trails</p> <p>Natural environment experience, non-motorised use, usually a buffer between Wilderness and semi-primitive wilderness/roaded natural areas</p> <p>Visual and audio impact from outside, at a short distance (< 5km)</p> <p>May be hiking huts or other types of low-scale accommodation, possible field ranger outposts.</p>	<p>Area is characterised by a predominantly natural or natural-appearing environment of moderate to large size, interaction between users is low, but there is often evidence of other users. The area is managed such that minimum on-site controls and restrictions may be present, but are subtle. Motorised use is not permitted.</p>
Rural	<p>A rural recreational node/area, rather than as a nature-based experience. Resort type development rather than a nature-based tourism facility.</p>	<p>Area is characterised by a substantially modified natural environment. Resource modifications and utilisation practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident and the interaction between users is often moderate-high. A number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.</p>

Map 1: Location Map of UNR



Map 2a: Topographic Map of UNR



Topographic Map : Map 2a Umlalazi Nature Reserve



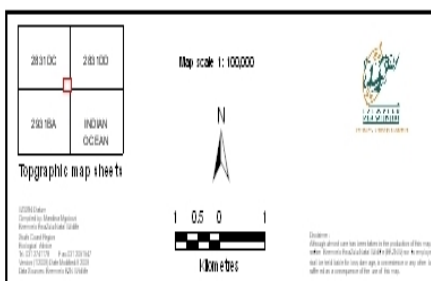
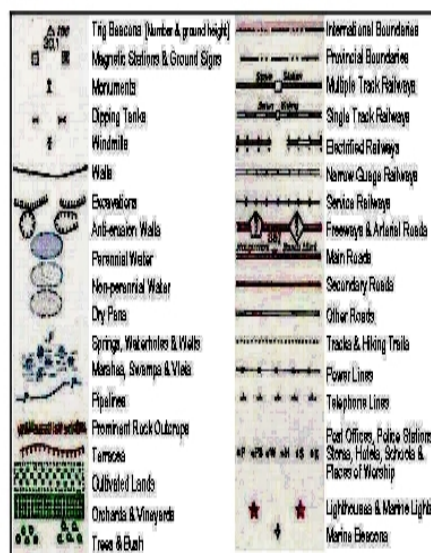
Boundary

Reserve Extents

Area: = 1469 Ha (Flat)/ (Surface)
 Boundary length: = 47.8 Km (Flat)/ (Surface)
 Highest point 100 m a.s.l
 Lowest point 20 m a.s.l
 Centroid (UM) -29.0196 dd Long. 31.7419 dd

Geographical Extent

Lat. -28°56'06.490" to -29°03'16.934"
 Long 31°39'45.212" to 31°49'13.249"



Map 2b: Tobographic Map of UNR



Topographic Map : Map 2b Umlalazi Nature Reserve

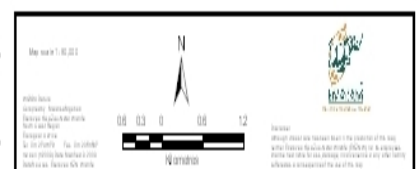
- Infrastructure
- Boundary

Reserve Extents

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 Lowest point 20 m a.s.l
 Centroid (UM) -29.0196 dd Long. 31.7419 dd

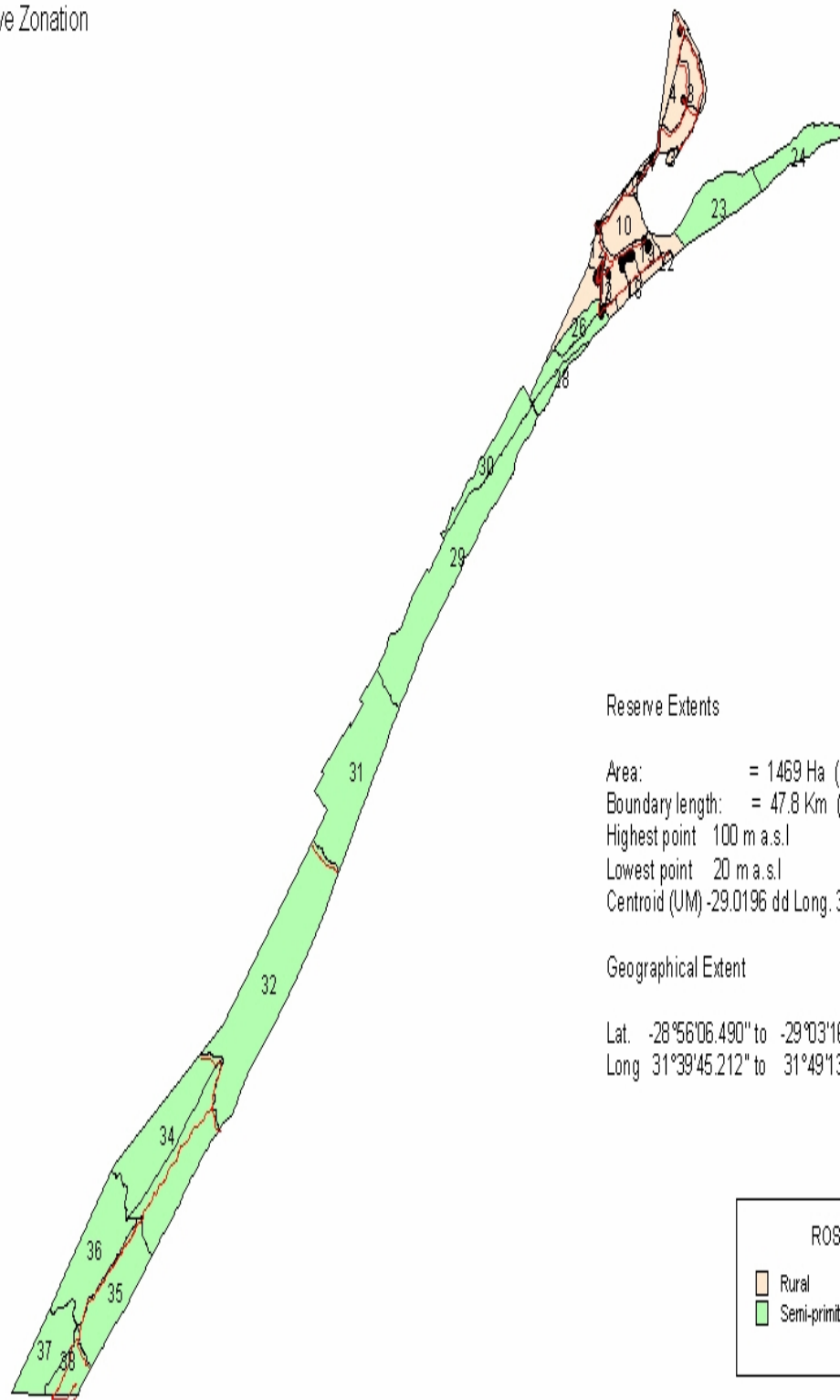
Geographical Extent

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 Long 31°39'45.212" to 31°49'13.249"

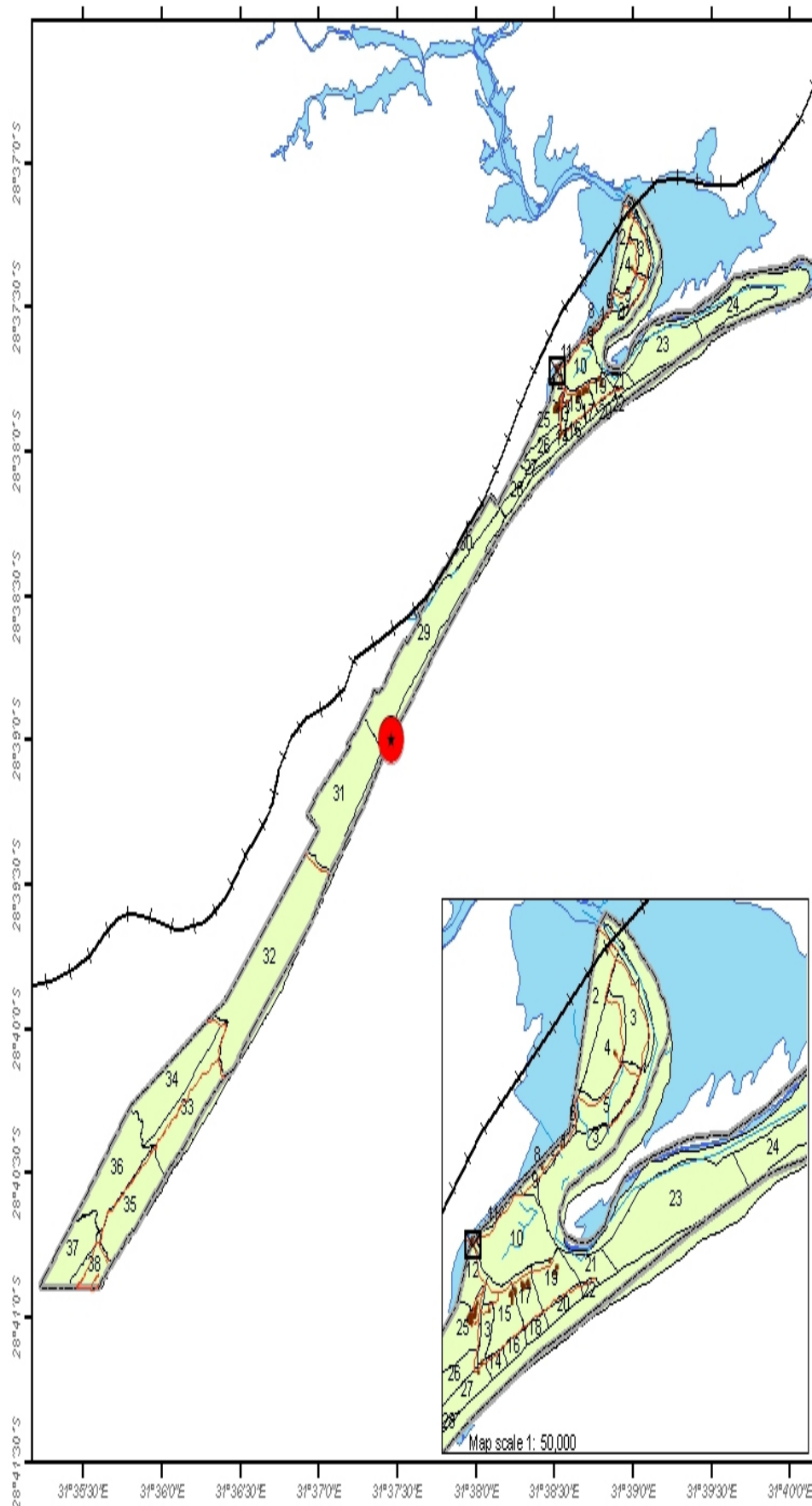


Map 3: Zonation of UNR

Umlalazi Nature Reserve Zonation

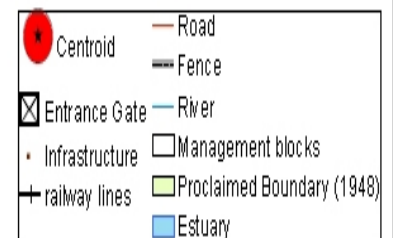


Map 4: Infrastructure Map of UNR



Infrastructure (Management Blocks) :Map 4 Umlalazi Nature Reserve

Management block	Perimeter	Hechre	Management block	Perimeter	Hechre
1	682.8	1.3	21	14456	7.5
2	2537.4	6.0	22	5162	1.4
3	2364.4	15.3	23	35460	51.0
4	369.4	1.9	24	31103	33.5
5	2897.3	15.5	25	32329	22.1
6	1855.5	18.4	26	20000	13.3
7	1546.1	14.3	27	35324	20.0
8	1140.0	1.9	28	23050	11.3
9	849.0	0.7	29	82467	135.4
10	1107.3	4.0	30	44185	31.3
11	2291.1	30.3	31	54722	119.3
12	1207.3	2.5	32	78507	186.3
13	1297.4	7.1	33	54611	82.0
14	984.9	4.0	34	53318	87.6
15	653.0	2.6	35	40540	67.1
16	1086.1	12.2	36	49615	82.2
17	121.2	3.0	37	32953	48.4
18	1165.8	7.3	38	23531	24.0
19	728.4	2.7			
20	1367.5	11.2			
	1008.1	4.1			

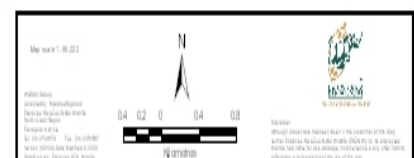


Reserve Extents

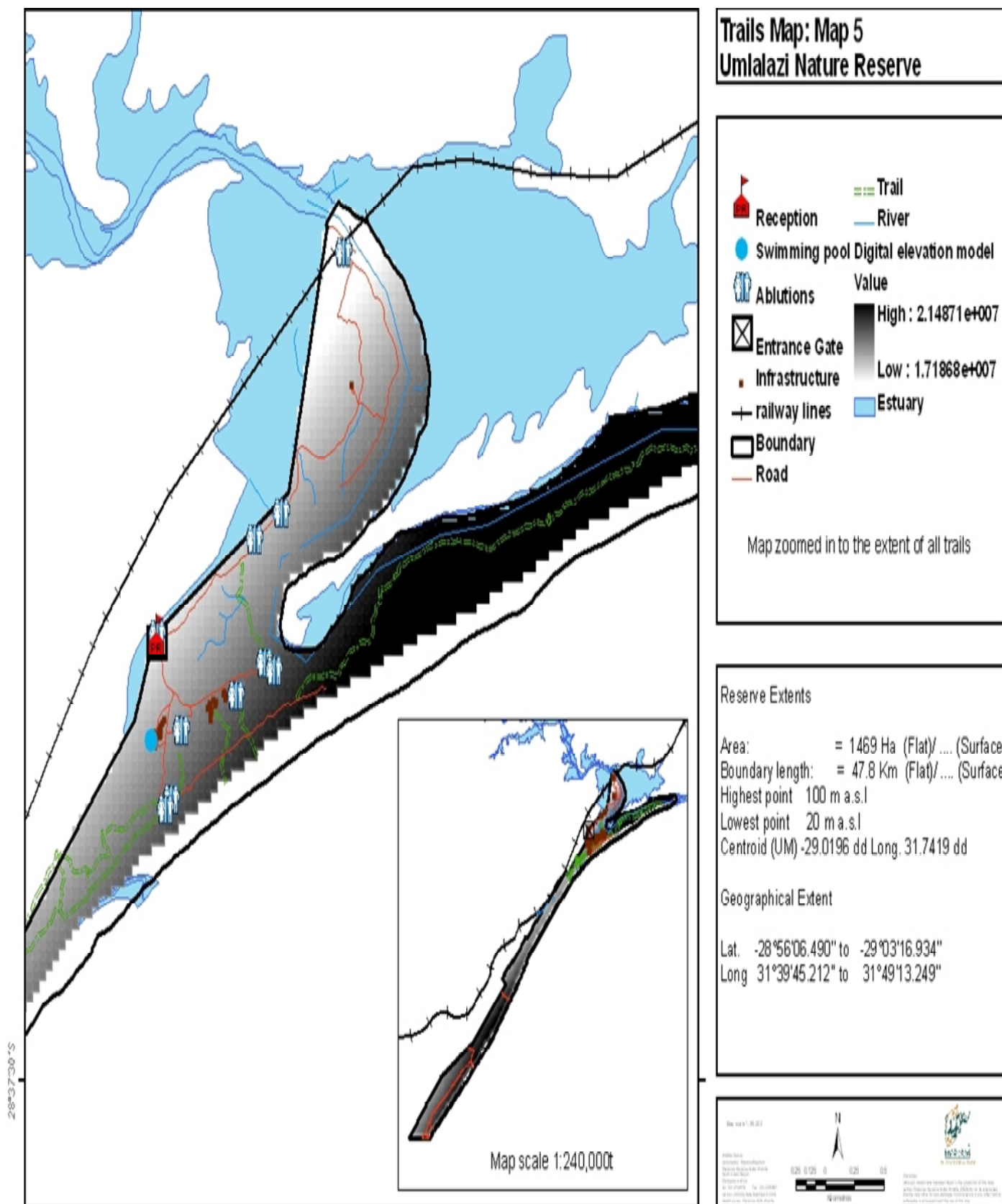
Area: = 1469 Ha (Flat)/ (Surface)
 Boundary length: = 47.8 Km (Flat)/ (Surface)
 Highest point 100 m a.s.l
 Lowest point 20 m a.s.l
 Centroid (UM) -29.0196 dd Long. 31.7419 dd

Geographical Extent

Lat. -28°56'06.490" to -29°03'16.934"
 Long 31°39'45.212" to 31°49'13.249"



Map 5: Trails Map of UNR



Umlalazi Nature Reserve: Vegetation

